City of Augusta
Conditional Use Application
Bureau of Planning, Department of Development Services

I. Applicant / Owner Information

Applicant Name: 96 Leighton Road, LLC

Mailing Address: 55 Winthrop Street Hallowell, ME 04347

Phone Number: 207-242-2510 Email Address eric@jameswhitneyco.com

Authorized Agent: E.S. Coffin Engineering & Surveying

Mailing Address: PO Box 4687 Augusta, ME 04330

Phone Number: 207-623-9475 Email Address: jcoffin@coffineng.com

Property Owner Name: 96 Leighton Road, LLC

Mailing Address: 55 Winthrop Street Hallowell, ME 04347

Phone Number: 207-242-2510 Email Address eric@jameswhitneyco.com

Which form of required "*evidence of standing*" is being submitted with this application?:

☒ Deed ☐ Signed Lease Contract ☐ Signed Purchase/Sale/Option Agreement

☐ Signed Written Agreement from Owner

II. General Project Information

Please attach a narrative answering the below listed questions about your project and address Site Plan Review Criteria for Conditional Uses (pages 4-6 of this application)

(a) Description of development project you are proposing (e.g. expansion of existing mixed-use commercial building; new office building; expansion of manufacturing shifts; expansion of commercial parking/loading areas; different land use; etc.)
(b) Size of any proposed building expansion (total sq.ft.)
(c) Description of uses occurring on site currently and what is proposed (e.g. retail, warehouse, storage, manufacturing).
(d) Hours of operation.
(e) Number of employees on-site for your largest shift (or for unmanned sites, how often per month site is visited by vehicles).
(f) Estimated number of vehicles entering your site on a daily basis (broken down by number and size of delivery vehicles and number of customer/visitor/employee vehicles).
(g) Total square footage of impervious surface area existing on site today (total square footage of first floor of each building plus square footage of all parking areas). Total square footage of impervious surface area after proposed development occurs.

Project Location: 96 Eight Leighton Road (Street) Map 9 – Lot 18D (Assessor Tax Map # + Lot #(s))

Project Name: 96 Leighton Road Self-Storage

Lot Size: (acreage) 3.5 acres **Lot Frontage:** (feet) 487' **Zoning District(s):** PD

☐ Change of Use Expansion of Less Than 1,000 sf ☒ Expansion of 1,000 sf or More (Development Review App.)

III. Applicant Acknowledgments

Complete Application Required

This application is being submitted under the requirements of the Augusta Land Use Ordinance. As the applicant, I understand that this application must contain a complete submission of required materials by the application deadline date in order to be heard by the Planning Board. The deadline allows for adequate review by City Staff and the Planning Board; and as such, any applications that are not complete by the submission deadline date *will not* be placed on the Planning Board meeting agenda. To insure review by the Planning Board on the date desired, the applicant should submit materials at least 7 days ahead of the deadline so that staff can determine completeness of materials.

Drawings and/or Maps are Required

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Site Access

As part of the project review process, City Staff and/or Planning Board Members may visit the project site. Signing this application authorizes site access.

Signature of Applicant / Agent: Jim Coffin

Signature of Property Owner: _____

Today's Date: February 13, 2023

Checklist of Required Submission Materials	Included	Waiver	N/A
Paper Copy			
11 copies of the Application Packet	X		
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Payment in full of $50 application fee (Note: an abutter notification fee will be assessed after the application is determined to be complete. The fee is $0.15 plus the cost of first class postage for each abutter that will be notified as required by the ordinance.)	X		
Electronic Copy			
1 CD, USB thumb drive, or e-mailed submission including all application documents in Adobe PDF format	X		

For Official Use:

☐ $50 **Conditional Use** Application Fee Paid. Received By (Initials):_____ Date:_____

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432 Cony Road
P.O. Box 4687
Augusta, ME 04330

E.S. COFFIN ENGINEERING & SURVEYING, INC.

(207) 623-9475
Fax (207) 623-0016
1-800-244-9475

February 13th, 2023

City of Augusta
Betsy Poulin (Planner)
One City Center
Augusta, Maine 04330

Subject: Review Criteria
96 Leighton Road, LLC
96 Leighton Road
Augusta, Maine

Dear Betsy:

96 Leighton Road, LLC, herein called the applicant is proposing to erect 39,375 sf of self-storage buildings at 96 Leighton Road in Augusta. The parcel is identified as Lot 18D on Tax Map 9 in the City of Augusta tax maps. The 3.49-acre parcel is in the Planned Development (PD) District as shown on the City's Zoning Map. The following information is required per the Development Review Application:

1. The proposed development will not result in undue water or air pollution. In making this determination, the following shall needs to be considered:
   A. The elevation of the land above sea level and its relation to the floodplain,
   The project is not within the 100-year flood elevation as shown on the attached FIRM Map and this section is not applicable.
   B. The nature of the soils and subsoils and their ability to adequately support waste disposal,
   Public sewer is available on the site and the proposed office building will connect directly to a manhole as shown on the site utility plan (C-2).
   C. The slope of the land and its effect upon effluents,
   Public sewer is available on the site and the proposed office building will connect directly to a manhole as shown on the site utility plan (C-2).
   D. The availability of streams for disposal of effluents;
   Public sewer is available on the site and the proposed office building will connect directly to a manhole as shown on the site utility plan (C-2).
   E. The applicable state and local health and water resources rules and regulations.
   The project will connect to public water along the north side of Leighton Road as shown on the site utility plan (C-2).

2. The proposed development has sufficient water available for the reasonable needs of the development.
   A letter from the Greater Augusta Utility District (GAUD) is included indicating that there is sufficient water capacity available for the project.

3. The proposed development will not cause an unreasonable burden on an existing water supply.
   A letter from the Greater Augusta Utility District (GAUD) is included indicating that the project will not cause an unreasonable burden on the existing water supply.

4. The proposed development will not cause unreasonable soil erosion, unmitigated stormwater runoff, or a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results.
   An erosion control plan is included depicting all erosion control devices with each device shown on the site plan(s). A Stormwater Permit Application has been submitted to the Department of Environmental Protection (DEP) and a copy has been submitted to the city.

5. The proposed development will not cause unreasonable highway or public road congestion or unsafe intersections or other conditions with respect to the use of the highways or public roads existing or proposed.
   A traffic report is included indicating that there will only be 11.4 peak hour trips for the project.

6. Major Developments additional traffic movement.
   A turning movement permit application is not required for the project because the peak hour trips are less than 100.

7. The proposed development will provide for adequate sewage waste disposal and will not cause an unreasonable burden on municipal services if they are used.
   The project will connect to public sewer and a letter has been provided from the GAUD.

8. The proposed development will not cause an unreasonable burden on the town's ability to dispose of solid waste, if Town services are used.
   A letter from Leslie Jones is included indicating that the proposed project will not create a burden at the Hatch Hill Land Fill.

9. The proposed development will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, archeological sites, significant wildlife habitat as identified by the Department of Inland Fisheries and Wildlife or the Town, or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline.
   A letter from the Maine Historical Preservation Committee is included indicating that there are not any historical or archeological sites located within the area of the site.
   A letter from the Maine Department of Inland Fisheries and Wildlife is included indicating there are concerns with Bat Species, but they do not anticipate significant impacts to the species as a result of the project.

A letter is included from the Department of Conservation confirming that there are not any rare botanical features within the project area.

10. The proposed development conforms to all applicable standards and requirements of this Ordinance, the comprehensive plan, and other local ordinances. In making this determination, the Planning Board may interpret these ordinances and plans.
    The proposed development will conform to the comprehensive plan and land-use ordinance.

11. The developer has adequate financial and technical capacity to meet all the Review Criteria and the standards and requirements contained in this Ordinance.
    A financial letter is indicating that the applicant has adequate financing to complete Phase 1.

12. Whenever situated entirely or partially within the watershed of any pond or lake or within 250 feet of any wetland, great pond or river as defined in Title 38, Chapter 3, Subchapter 1, Article 2-B, the proposed development will not adversely affect the quality of that body of water or unreasonably affect the shoreline of that body of water.
    The project is not in shoreland zoning nor is it near any great pond or river and therefore this section is not applicable.

13. The proposed development will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of ground water.
    The project will connect to public water & sewer and not affect the quantity or quality of groundwater.

14. Based on Federal Emergency Management Agency's Flood Boundary and floodway Maps and Flood Insurance Rate Maps, and information presented by he applicant whether the development is in a flood-prone area. If the development, or any part of it, is in such an area, the developer shall determine the 100-year flood elevation and flood hazard boundary within the development. The proposed plan must include a condition of plan approval requiring that principal structures in the subdivision will be constructed with the lowest floor, including he basement, at least one foot above the 100-year flood elevation.
    A Firmette map is included indicating that the proposed project is not within the 100-year flood elevation and therefore this section is not applicable.

15. All fresh water wetlands within the proposed development have been identified and delineated on any maps submitted as part of the application, regardless of the size of these wetlands. All wetlands shall be preserved to the greatest extent practicable.
    There are some wetlands on site, but only 3,540 sf will be impacted by the project and therefore a Natural resource Protection Act (NRPA) permit application is not required.

16. River, stream or brooks.
    There are not any streams or brooks on the parcel and this section is not applicable.

17. The proposed development will provide for adequate storm water management.
    Stormwater is addressed as part of the DEP's Stormwater Permit application.

18. Access to direct sunlight: The Planning Board may, to protect and ensure access to direct sunlight for solar energy systems, prohibit, restrict or control development.
    There is maximum 44' high rock face along the north side of the property. Once the ledge is removed the site will essentially be a plateau with sloping buildings towards the center of the parcel. The proposed self-storage buildings are all one story in height with 10' eaves and a maximum of 12' high at the peak. The office building will have a 10' eave height with a 6:12 pitch resulting in a building height of 15' at the peak. The project will not affect access to direct sunlight by the abutters.

19. Title 38 M.R.S.A. as amended, Section 484, Standards for Development; Chapter 371, Definition of Terms used in the Site Location of Development Law and Regulations.
    This project will exceed not three acres in impervious surfaces and therefore a SLODA is not required to be submitted to the DEP.

20. Spaghetti lots prohibited.
    This section is not applicable.

21. All outdoor lighting shall be of a design and construction that prevents light trespass beyond the boundaries of the property on which it is located.
    The site essentially sits down in a hole with ledge walls to the north, east and west sides. The nearest exterior light along the south side of the property is over 180' from Leighton Road. The exterior lighting for the project will not allow the lumens to trespass across any property line.

The proposed development complies with the City of Augusta's review criteria and should you have any questions or concerns please do not hesitate to contact me at 623-9475.
Respectfully submitted,

James E. Coffin, PE

432 Cony Road
P.O. Box 4687
Augusta, ME 04330

E.S. COFFIN ENGINEERING & SURVEYING, INC.

(207) 623-9475
Fax (207) 623-0016
1-800-244-9475

February 13th, 2023

City of Augusta
Attn: Betsy Poulin
City Planner
One City Center
Augusta, Maine 04330

Subject: Neighborhood Compatibility
96 Leighton Road, LLC
96 Leighton Road
Augusta, Maine

Dear Betsy:

96 Leighton Road, LLC, herein called the applicant is proposing to erect 39,375 sf of self-storage buildings at 96 Leighton Road in Augusta. The parcel is identified as Lot 18D on Tax Map 9 in the City of Augusta tax maps. The 3.49-acre parcel is in the Planned Development (PD) District as shown on the City's Zoning Map.

The project must address neighborhood compatibility per the City of Augusta Land Use Ordinance section 6.3.4 (SITE PLAN REVIEW CRITERIA APPLICABLE TO CONDITIONAL USES). [We understand that the intent of the section is to encourage the applicant to design the proposal in consideration of the physical impact it will have on the immediate neighborhood within 1,000 feet.] Each item is addressed below:

1) NEIGHBORHOOD COMPATIBILITY:
   a) Is the proposal compatible with and sensitive to the character of the site and neighborhood relative to:
      i) Land uses:
      The project is located in the PD District, in which self-storage uses are considered a conditional use. The site is undeveloped with an existing gravel access drive in the middle of the site. There are some apartment buildings along the east side of the property. There are no residential structures along the north property line, but several commercial uses along the south side of Leighton Road.
      ii) Architectural design:
      The applicant has provided cut sheets of the proposed building type, which is included with the planning board submission.

iii) Scale, bulk and building height:
Four of the self-storage buildings are 5,000 sf, two are 6,000 sf, one is 1,500 and one is 5,875 sf for a total of 39,375 sf. The proposed self-storage buildings are all one story in height with 10' eaves and a maximum of 12' high at the peak. The office building (720 sf) will have a 10' eave height with a 6:12 pitch resulting in a building height of 15' at the peak.

iv) Identity and historical character:
The Maine Historic Preservation Commission has provided a letter verifying that there are not any historic properties affected by this project and this section is not applicable.

v) Disposition and orientation of buildings on the lot:
The location and orientation of the buildings are shown on the site plan (Sheet C-1). Each building has a 1% slope for the slab that allows the runoff between the buildings to drain in both an east/west direction and a west/east direction towards the middle of the parcel. This avoids having to use catch basins and pipes in between these areas and save substantial monies in earthwork.

vi) Visual integrity:
The buildings will be a typical metal self-storage building with cut sheets included with this submission.

b) Are the elements of the site plan designed and arranged to maximize the opportunity for privacy by the residents of the immediate area?
The layout of the proposed self-storage buildings in an east-west direction helps keep activities on site hidden from adjacent neighbors and Leighton Road. The ledge removal on site will result in walls along the east, west and north sides of the property, which will shield headlights from abutting land owners

c) Will the proposal maintain safe and healthful conditions within the neighborhood?
There is an apartment building located 44' from the west property line, but the proposed self-storage buildings will site down 20' below the apartment's finish floor elevation. The buildings form a partial barrier along the south property line so activities on site are somewhat hidden from abutting properties. In addition, Bufferyard "C" will be installed along a portion of the east and west property lines and all along the south property line abutting Leighton Road. The project will contain a 6' high fence providing security around the entire project. This project will not create an unhealthy condition within the immediate area.

d) Will the proposal have a significant detrimental effect on the value of adjacent properties?
This property has never been developed with the exception of the sewer line running through it. The proposed self-storage buildings will not have a detrimental effect on the value of adjacent properties.

2) PLANS AND POLICIES:

a) Is the proposal in accordance with the adopted elements of the 1988 Growth Management Plan?
The project complies with the 1988 Growth Management Plan.

3) TRAFFIC PATTERN, FLOW AND VOLUME:
   a) Is the proposal designed so that the additional traffic generated does not have a significant negative impact on surrounding neighborhood?
   A traffic report is included 1 indicating that there will only be 11.4 peak hour trips for the project and therefore a traffic study is not required.
   b) Will safe access be assured by providing proper sight distance and minimum width curb cuts for safe entering and exiting? See City of Augusta Technical Standards Handbook.
   The access point will be relocated to the west 235' and will be 25' wide along Leighton Road. There is adequate sight distance from this new location, which conforms to the city's technical standards.
   c) Does the proposal provide access for emergency vehicles and for persons attempting to render emergency services?
   The police and fire departments have provided letters stating no objections for the project. The site design incorporates sufficient access for emergency services as needed.
   (d) Does the entrance and parking system provide for the smooth and convenient movement of vehicles both on and off the site? Does the proposal satisfy the parking capacity requirements of the city and provide adequate space suited to the loading and unloading of persons, materials and goods?
   There is sufficient room to allow up to three vehicles to park and use a card to open the gate. There are not any parking spaces provided due to the nature of the self-storage operation. There will not be a dumpster on site as this would be counterproductive to the self-storage operation.

4) PUBLIC FACILITIES:
   a) <u>Water Supply:</u>
   The office building will connect to public water and a letter is included from the Greater Augusta Utility District.
   b) <u>Sanitary Sewer:</u>
   The office building will connect to public sewer and a letter is included from the Greater Augusta Utility District.
   c) <u>Electricity/Telephone:</u>
   Power will be brought in overhead to a new pole on site and then run underground to the office building.
   d) <u>Storm Drainage:</u>
   A stormwater permit application has been submitted to the Maine DEP.

5) RESOURCE PROTECTION AND ENVIRONMENT:
   a) If the proposal contains known sensitive areas such as erodible or shallow soils, wetlands, acquifers, aquifer recharge areas, floodplain or steep slopes (over fifteen (15) percent, what special engineering precautions will be taken to overcome these limitations?
   There will be 3,540 sf of wetland impacts associated with the project, which does not require a NRPA permit application to the DEP. The site is very steep and test pits have revealed rock beneath the surface. Blasting will be needed and a blasting plan is included with the submission. The property is not within the 100-year floodplain as shown on the attached Firmette Map.
   b) Does the proposal conform to applicable local, State DEP and Federal EPA air quality standards including but not limited to odor, dust, fumes or gases which are noxious, toxic or corrosive, suspended solid or liquid particles, or any air contaminant which may obscure an observer's vision?
   No State DEP or Federal EPA permits are needed in regard to air quality standards for this project.
   c) Does the proposal conform to applicable local, State DEP and Federal EPA water quality standards, including but not limited to erosion and sedimentation, runoff control, and solid wastes and hazardous substances?
   As mentioned above a Natural Resource Protection Act (NRPA) permit application is not required for the project. A Maine General Permit (MGP) has been filed for land disturbances over one acre and a stormwater permit application has been filed with the DEP. No Federal EPA permits are needed in regard to air quality standards for this project.
   d) Will all sewage and industrial wastes be treated and disposed of in such a manner as to comply with applicable federal, state and local standards?
   The office building will connect to the public sewer system and a letter from the Greater Augusta Utility District is included. There will not be any industrial wastes associated with this project. The project will comply with all applicable standards.
   e) Shoreland and Wetland Districts:
   As previously mentioned, the project is not in shoreland zoning nor is a NRPA permit application required for the project.

6) PERFORMANCE STANDARDS:
   a) Does the proposal comply with all applicable performance and dimensional standards as outlined in this ordinance?
   The project is in the PD District, in which self-storage is a conditional use. The project complies with the dimensional requirements of the RV District.

b) Can the proposed land use be conducted so that noise generated shall not exceed the performance levels specified in the performance standards section of this ordinance? Detailed plans for the elimination of objectionable noises may be required before the issuance of a building permit.
Self-storage uses typically do not have issues in regard to noise. In addition, the project sits down in a hole with only the south side visible. There will be much more noise generated from traffic on Leighton Road when compared to noises on site.

c) If the proposal involves intense glare or heat, whether direct or reflected, is the operation conducted within an enclosed building or with other effective screening in such a manner as to make such glare or heat completely imperceptible from any point along the property line? Detailed plans for the elimination of intense glare or heat may be required before issuance of a building permit. Temporary construction is excluded from this criterion.
The self-storage project will not result in intense glare or heat.

d) Is the exterior lighting, except for overhead street lighting and emergency warning or traffic signals, installed in such a manner that the light source will be sufficiently obscured to prevent excessive glare on public streets and walkways or into any residential area?
All of the fixtures are wall packs and are full cut-off and illumination will be confined to within the property lines. The plan complies with the LUO in regard to light trespass onto abutting properties.

e) Does the landscaping screen the parking areas, loading areas, trash containers, outside storage areas, blank walls or fences and other areas of low visual interest from roadways, residences, public open space (parks) and public view?
Bufferyard "C" will be installed along the south side of the property and along a portion of the east and west property lines with a fence all around the self-storage units. There will not be any dumpsters on site.

f) Are all the signs in the proposal in compliance with provisions of this ordinance?
There will be a sign at the main entrance that will not exceed 120 sf.

7) FINANCIAL AND TECHNICAL ABILITY:

a) E.S. Coffin Engineering & Surveying has the technical ability to meet the terms of the Ordinance.

b) The applicant has provided a financial capacity letter, which is included with this submission.

The proposed project meets the requirements of land use ordinance and if you should have any questions or concerns, please do not hesitate to contact me at 623-9475.
Sincerely,

James E. Coffin, P.E.

432 Cony Road
P.O. Box 4687
Augusta, ME 04330

E.S. COFFIN ENGINEERING & SURVEYING, INC.

(207) 623-9475
Fax (207) 623-0016
1-800-244-9475

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b) Size of any proposed building expansion (total sq.ft.):
The following buildings will be erected on site:
1. **Four self-storage buildings (5,000 sf footprint each).**
2. **Two self-storage buildings (6,000 sf footprint each).**
3. **One self-storage buildings (1,500 sf footprint each).**
4. **One self-storage buildings (5,875 sf footprint each).**
5. **Office building (720 sf).**

The total footprint of all buildings will be 40,095 sf.

c) Description of uses occurring on site (e.g. retail, warehouse, storage, manufact.):
The proposed use will be self-storage.

d) Hours of operation:
The facility can be accessed 24 hours a day, seven days a week.

e) Number of employees on-site for your largest shift:
There will be a maximum of one employee on site on a given day.

f) Estimated number of vehicles entering your site on a daily basis (broken down by number and size of delivery vehicles and number of customer/visitor/employee vehicles).
A traffic report is included indicating a maximum of 11.4 peak hour trips, which is well below the City's 35 peak hour trip threshold for a traffic study.

g) Total square footage of impervious surface area existing on site today (total square footage of first floor of each building plus square footage of all parking areas). Total square footage of impervious surface area after proposed development occurs.
There is 2,480 sf of impervious area being utilized as a driveway on site today. There will be an impervious area of 85,055 sf (1.9 acres) from the total buildout.

City of Augusta
Conditional Use Application
Bureau of Planning, Department of Development Services

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Authorized Agent: E.S. Coffin Engineering & Surveying

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Project Location: 96 Eight Leighton Road (Street) Map 9 – Lot 18D (Assessor Tax Map # + Lot #(s))

Project Name: 96 Leighton Road Self-Storage

Lot Size: (acreage) 3.5 acres **Lot Frontage:** (feet) 487' **Zoning District(s):** PD

☐ Change of Use Expansion of Less Than 1,000 sf ☒ Expansion of 1,000 sf or More (Development Review App.)

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Site Access

As part of the project review process, City Staff and/or Planning Board Members may visit the project site. Signing this application authorizes site access.

Signature of Applicant / Agent: _____

Signature of Property Owner: _____

Today's Date: February 13, 2023

Checklist of Required Submission Materials	Included	Waiver	N/A
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1 CD, USB thumb drive, or e-mailed submission including all application documents in Adobe PDF format	X		

For Official Use:

[] $50 **Conditional Use** Application Fee Paid. Received By (Initials):_____ Date:_____

[] $_____ **Abutter** Notification Fee Paid. Received By (Initials):_____ Date:_____

January 16th, 2023

Mr. James Coffin, PE
E.S. Coffin Engineering & Surveying, LLC.
432 Cony Road
P.O. Box 4687
Augusta, Maine 04330

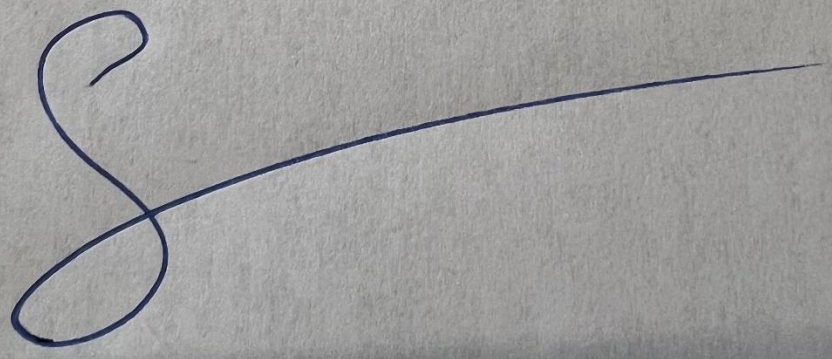
Subject: Agent Authorization
DEP SW & Planning Board Applications

Dear Mr. Coffin

The intent of this letter is to authorize E.S. Coffin Engineering & Surveying, Inc. to act as our agent in submitting applications and answering questions regarding the City of Augusta Planning Board and DEP stormwater permit applications as needed. The applications are for our proposed self-storage project located at 96 Leighton Road in Augusta, Maine.

Sincerely,

Mr. Eric James
Owner 96 Leighton Road, LLC



OPR BK 14353 PGS 195 - 197 02/14/2022 01:08:09 PM
INSTR # 2022003528 # OF PAGES 3
ATTEST: DIANE WILSON
ACTING REGISTER OF DEEDS KENNEBEC COUNTY, ME

TRANSFER TAX PAID

WARRANTY DEED

DLN #: 1002240182473

KNOW ALL MEN BY THESE PRESENTS, that it, **BEST APARTMENTS, INC.**, a Maine corporation with an address of 12 Hope Way, Augusta, Maine 04330, for consideration paid, grants to **96 LEIGHTON RD, LLC**, a Maine limited liability company with an address of 55 Winthrop Street, Hallowell, Maine 04347, with **WARRANTY COVENANTS**, a certain lot or parcel of land, together with any buildings thereon, situated in the City of Augusta, County of Kennebec, and State of Maine, bounded and described as follows:

See Schedule A attached hereto and incorporated herein by reference.

THIS conveyance is made subject to and benefitted by any and all easements, appurtenances and out-conveyances of record, insofar as the same may affect the subject premises.

WITNESS its hand and seal this 9th day of February, 2022.

Signed, Sealed and Delivered in the presence of: Best Apartments, Inc.

Witness

By: Timothy L. Gooch, President

STATE OF FLORIDA
COUNTY OF Sarasota

February 9, 2022

Then personally appeared the above-named Timothy L. Gooch, President of Best Apartments, Inc., and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of Best Apartments, Inc.

Before me,

AMELIA JEFFERSON
Notary Public - State of Florida
Commission # HH 184427
My Comm. Expires Oct 10, 2025
Bonded through National Notary Assn.

Notary Public / Attorney at Law
Printed Name: Amelia Jefferson
Commission Expires: 10/10/25

(3) D. McCulum

SCHEDULE A

A parcel of land located on the northwesterly side of the Leighton Road, approximately 0.4 mile from the Old Winthrop Road, in the City of Augusta, County of Kennebec, State of Maine, being more particularly described as follows:

BEGINNING at a 5/8-inch rebar set in 2005 on the northwesterly right-of-way line of Leighton Road and at a southeasterly comer of Capital Workforce Housing, L.P. (Book 8727-Page 304) and shown as Parcel Three (3) on plan entitled "Recording Plat, Capital Village, Best Apartments , Inc., Leighton Road, Augusta, Kennebec County, Maine" by E. S. Coffin Engineering & Surveying, Inc., dated April 22, 2005, revised November 29, 2005, and recorded in the Kennebec County Registry of Deeds in Plan File 2005-Pages 199 & 200;

THENCE southwesterly partially along a stone wall and along the northwesterly right-of- way line of Leighton Road to the end of said stone wall. The tie line along this course is South 16° 38' 24" West and 173.88 feet;

THENCE South 76° 06' 59" East along the right-of-way line of Leighton Road, a distance of 6.97 feet;

THENCE southwesterly along the northwesterly right-of-way line of Leighton Road to the northeasterly comer of Klemens & Patricia Burdzel Living Trust (Book 5487-Page 110, 112, & 114), the tie line along this course is South l0° 19' 7" West and 313.19 feet;

THENCE North 82° 48' 25" West along the northeasterly line of said Burdzel Living Trust, a distance of 150.13 feet to a 1-inch pipe found in 2005 at a northeasterly comer of said Parcel Three (3);

THENCE North 82° 53' 03" West along the northeasterly line of said Parcel Three (3), a distance of 160 .00 feet to a 5/8-inch rebar set in 2005;

THENCE North 12° 50' 46" East along the southeasterly line of said Parcel Three (3), a distance of 537.47 feet to a 5/8-inch rebar set in 2005;

THENCE South 73° 17' 35" East along the southwesterly line of said Parcel Three (3), a distance of 300.02 feet back to the point of beginning.

ALL directions are Magnetic North 1984.

SUBJECT TO a perpetual 30-foot wide easement over the above described parcel for the purpose of installing, operating, replacing, and maintaining a sewer line and related improvements running from the southerly sideline of Parcel #3 in a general southerly

direction to the northwesterly right-of-way line of Leighton Road as shown on the Recording Plat, the centerline of which easement is more particularly described as follows:

> BEGINNING on the southerly line of Parcel #3 and on the centerline of the 30-foot wide easement, said point of beginning being North 73° 17' 35" West and 94 feet from a 5/8-inch rebar set in 2005 at the southeasterly comer of Parcel #3 and on the northwesterly right- of-way line of Leighton Road;
>
> THENCE running South 15° 26' 40" West a distance of 76 feet to a point;
>
> THENCE running South 06° 56' 59" West a distance of 185 feet to a point;
>
> THENCE running South 30° 27' 41" West a distance of 127 feet to a point;
>
> THENCE South 41° 36' 40" East a distance of 151 feet (incorrectly stated as 139 feet in the deed recorded in Book 8727, Page 304) to a point and the northwesterly sideline of Leighton Road.

THE fee owner of such easement area agrees to join in the conveyance of a sewer easement to the Augusta Sanitary District.

BEING the remaining premises conveyed in a deed from Carl E. York, J. and Bonnie M. Kinney to Best Apartments, Inc., dated December 15, 2004, recorded at the Kennebec County Registry of Deeds in Book 8247, Page 333.

DM-6849

LITEPAK SERIES LNC2

Cat.# LNC2 12L U 4K 4

Job

Type

HUBBELL Outdoor Lighting

Approvals

SPECIFICATIONS

Intended Use:
The compact LED LNC2 is designed for perimeter illumination for safety, security and identity. This compact fixture has no uplight and is neighbor friendly with typical mounting heights up to 15ft. Units are supplied with an acrylic diffuser accessory that can be used for lower LED brightness near building entrances or other pedestrian areas. Units have protective polyester finish for long lasting appearance.

Construction:
Decorative die-cast aluminum housing protects components and provides an architectural appearance. Casting thermally conducts LED heat to optimize performance and long life. Powder paint finish provides durability in outdoor environments.

Electrical:
- 120V-277V universal voltage 50/60Hz 0-10V dimming drivers
- 347V and 480V dimmable driver option in 12L configuration
- Electronic drivers: One in 5L, 7L, 9L and 12L units Two drivers in 18L units
- Minimum operating temperature is -40˚C/-40˚F
- Driver RoHS and IP66
- Drivers have greater than .90 power factor and less than 20% Total Harmonic Distortion

LED(s) CCT:
- 3000K CCT nominal – 80 CRI, 4000K CCT nominal – 70 CRI, 5000K CCT nominal – 70 CRI
- 5, 7, 9, 12 and 18 LED configurations available see page 2 for electrical and photometric details

Optical:
Type II, III and IV distributions with zero uplight; Individual PMMA acrylic lenses for wide lateral throw, maximum control and efficiency; Acrylic diffuser included where reduced LED brightness is desired

Lumen Maintenance:
L96 at 60,000hrs (Projected per IESNA TM-21-11), see table on page 2 for all values

Installation:
Quick-mount adapter provides easy installation to wall or to recessed junction boxes (4" square junction box). Gasket seal and secured by two Allen-head hidden fasteners for tamper resistance. Designed for direct j-box mount or conduit feed in single SKU. Conduit feed not available with BBU.

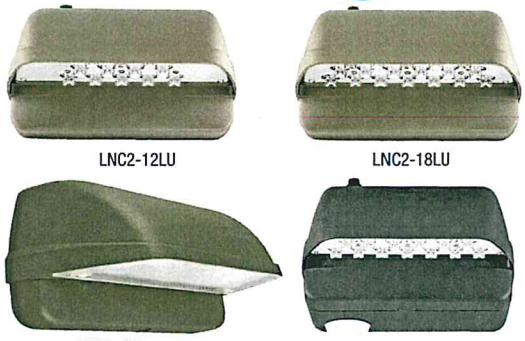
Options:
Controls:
- Button photocontrol for dusk to dawn energy savings
- Occupancy sensor options available for complete on/off and dimming control (includes factory installed back box)

Egress (includes factory installed back box):
- Battery back-up option - 12L configuration only
- Provides 1 fc minimum over 10' x 10' at 11' mounting height (exceeds NEC requirement)
- 1,546 initial lumens in battery mode
- Meets UL924 90 minute discharge schedule
- -20˚C to 30˚C operating temperature

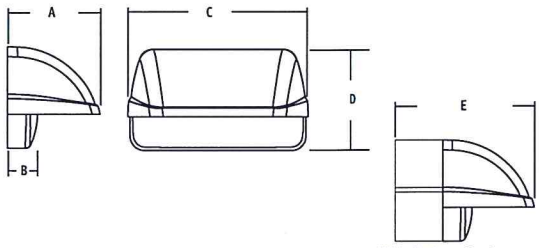
Listings:
- DLC Qualified (Types III and IV) Consult DLC website for details: http://www.designlights.org/QPL
- Listed to UL 1598 for use in wet locations, 40˚ C ambient environments

Warranty:
Five year limited warranty (for more information visit: http://www.hubbelloutdoor.com/resources/warranty/
- IES Progress Award Winner - 2013
- Building Operating Management 2014 Top Products Award - LNC2-18LU

PRODUCT IMAGE(S)



DIMENSIONS



A	B	C	D	E	Weight / BBU
6.25"	1.6"	10.25"	5.6"	10.25"	7.0 / 15.0 lbs.
158.7 mm	40.2 mm	260.4 mm	142.2 mm	260.4 mm	3.2 / 6.8 kg

SHIPPING INFORMATION

Catalog Number	G.W(kg)/ CTN	Carton Dimensions			Carton Qty. per Master Pack
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)	
LNC2-12LU	14.3 (6.5)	14.5 (37)	11.4 (29)	8.4 (21.5)	2
LNC2-18LU	14.8 (6.7)	14.9 (38)	11.4 (29)	8.4 (21.5)	2

CERTIFICATIONS/LISTINGS

C US Turtle Friendly DLC QPL LISTED ida DARK SKY APPROVED 2014

*3000K and warmer CCTs only

ORDERING INFORMATION – ORDERING EXAMPLE: LNC2-12LU-5K-3-1

LNC2 - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

SERIES	NUMBER OF LEDS	VOLTAGE [7]	CCT	IES DISTRIBUTION	FINISH	OPTIONS
LNC2 LNC2	5L 5 LEDs	U 120V-277V	3K[2] 3000K nominal 80 CRI	2[2] Type II	1 Bronze	PC Photocontrol
	7L 7 LEDs	1 120V	4K 4000K nominal 70 CRI	3 Type III	2 Black	BBU[1,6] Integral battery for 12L only (must specify 120V or 277V voltage in voltage category) rated for -20˚C to 30˚C
	9L 9 LEDs	2 208V	5K 5000K nominal 67 CRI	4 Type IV	3 Gray	
	12L[3] 12 LEDs	3 240V	AM Amber (590 µm available for "Turtle Friendly"/observatory applications, 350 mA (18L only versions)		4 White	SCP[4,5,6] Programmable motion sensor, factory default dimming is 10% light output
	18L 18 LEDs	4 277V			5 Platinum	
	12L5 12 LEDs, 480V	5 480V (12L only)				
	12LF 12 LEDs, 347V	F 347V (12L only)				

SPECIFY SCP HEIGHT
8F Up to 8ft mount height
20F Up to 20ft mount height

[1] Battery backup only available on 12L models, not available for Canada
[2] Does not qualify for DLC
[3] Replace U with 1 for 120V or 4 for 277V for 12L with BBU
[4] Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings, 120V-277V only
[5] PC option not applicable, included in sensor
[6] BBU and motion sensor options cannot be combined

HUBBELL Outdoor Lighting
Hubbell Outdoor Lighting • 701 Millennium Boulevard • Greenville, SC 29607 • Phone: 864-678-1000
Due to our continued efforts to improve our products, product specifications are subject to change without notice.

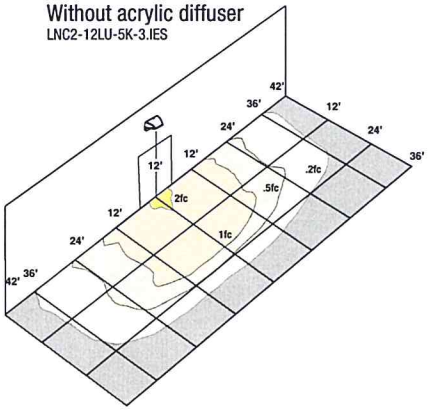
REPLACEMENT PART/ACCESSORIES

CATALOG NUMBER	DESCRIPTION
93044013	Frosted comfort shield, improves uniformity with only 5% lumen reduction
SCP-REMOTE*	Remote control for SCP option. Order at least one per project to program and control fixtures
BB-GEO-XX	Back box with 4 - 1/2" threaded conduit holes, XX = specify finish, eg. Dark Bronze - DB
LNC2-SCBB-XX	Plate to be used with GEO-BB-XX surface conduit box, XX=finish (see page 3)

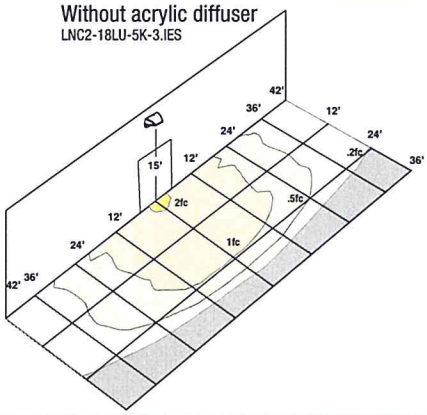
*Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings, 120V or 277V only

PHOTOMETRICS

Without acrylic diffuser
LNC2-12LU-5K-3.IES



Without acrylic diffuser
LNC2-18LU-5K-3.IES



PERFORMANCE DATA

# OF LEDS	DRIVE CURRENT	SYSTEM WATTS	DIST. TYPE	5K (5000K nominal, 70 CRI) LUMENS	5K (5000K nominal, 70 CRI) LPW[1]	4K (4000K nominal, 70 CRI) LUMENS	4K (4000K nominal, 70 CRI) LPW[1]	3K (3000K nominal, 80 CRI) LUMENS	3K (3000K nominal, 80 CRI) LPW[1]
5	STD. (700mA)	13W	2	1,150	88.5	1,052	81	883	68
			3	1,132	87	1,077	83	833	64
			4	1,146	88	1,053	81	849	65
7		17W	2	1,515	89	1,369	80.5	1,272	75
			3	1,500	88	1,539	90.5	1,392	82
			4	1,557	91.5	1,535	90	1,425	84
9		22W	2	2,069	94	2,033	92	1,588	72
			3	2,024	92	1,989	90	1,623	74
			4	2,095	95	2,059	93.5	1,680	76
12		28w	2	2,869	102.5	2,465	88	2,047	73
			3	2,868	102.5	2,662	95	2,160	77
			4	2,716	97	2,715	97	2,104	75
18		42.7w	2	4,166	97.5	3,631	85	3,304	77
			3	4,106	96	3,806	89	3,128	73
			4	3,995	93.5	3,998	93.5	3,122	73

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application. LNC2-12L battery mode produces 1,546 initial lumens. Meets UL924 90 minute discharge pattern.

PROJECTED LUMEN MAINTENANCE

Ambient Temp.	OPERATING HOURS 0	25,000	50,000	TM-21-11[1] L96 60,000	100,000	L70 (hours)
25°C / 77°F	1.00	0.98	0.97	0.96	0.95	>791,000
40°C / 104°F	0.99	0.98	0.96	0.96	0.94	>635,000

1. Projected per IESNA TM-21-11 * (Nichia 219B, 700mA, 85°C Ts, 10,000hrs)
Data references the extrapolated performance projections for the LNC-12LU-5K base model in a 40°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0° C	32° F	1.02
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	1.00
40° C	104° F	0.99

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

ELECTRICAL DATA

# OF LEDS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	CURRENT (Amps)	SYSTEM POWER (w)
7	STD. (700mA)	120	–	18
		277	–	18
9		120	0.183	22
		277	0.09	22.1
12		120	0.24	28.9
		277	0.10	27.7
		347	0.10	33.7
		480	0.06	28.9
18		120	0.35	41.0
		277	0.15	41.5
18 Amber		120	2.68	32.0

MOTION SENSOR OPTION

Sensor offers greater control and energy savings with SCP programmable sensor with adjustable delay and dimming levels (Factory default is 10%)

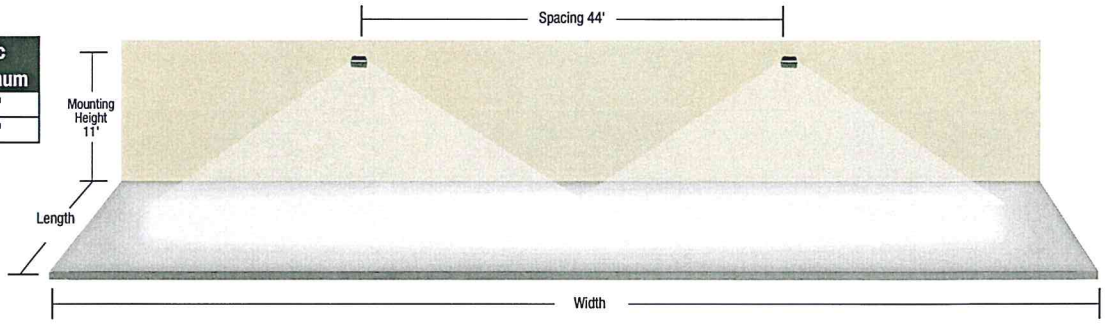
Visit: **http://www.hubbelllighting.com/solutions/controls/** for control application information

LNC2 – BATTERY BACK UP

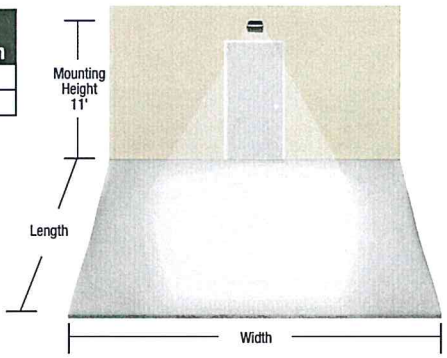
Side View

3/4 View

Multi Unit	1 fc Average	1 fc Minimum
Length	16'	15'
Width	112'	68'



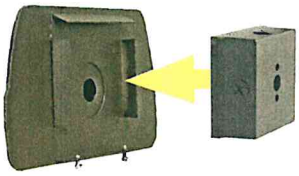
Single Unit	1 fc Average	1 fc Minimum
Length	16'	15'
Width	48'	24'



Provides Life Safety Code average illuminance of 1.0 fc. Assumes open space with no obstructions and mounting height of 11'
Diagrams for illustration purposes only, please consult factory for application layout.

LNC2-SCBB-XX SURFACE CONDUIT BACK PLATE

LNC2 FIXTURE



LNC2-SCBB-XX

BB-GEO-XX

LNC2-SCBB-XX and BB-GEO-XX SHOWN ATTACHED TO FIXTURE

DELINEATION NOTES:
WETLAND STUDY CONDUCTED MAY 11, 2022
NO VERNAL POOL HABITAT WAS IDENTIFIED WITHIN STUDY LIMITS

PLAN NOTES:
THIS PLAN IS A COMPOSITE OF PROPERTY BOUNDARY INFORMATION PERCITY OF AUGUSTA TAX MAP, MAINE OFFICE OF GIS 2' TOPOGRAPHIC CONTOURS & AERIAL PHOTOGRAPH, AND SUBMETER GPS LOCATION OF WETLAND BOUNDARIES & OTHER SITE FEATURES AS DEPICTED BY LONGVIEW PARTNERS, LLC.

LEGEND:

FRESHWATER WETLAND AREA *(LOCATED BY LONGVIEW PARTNERS, LLC SUBMETER GPS)*

MAN-MADE DITCHLINE *(LOCATED BY LONGVIEW PARTNERS, LLC SUBMETER GPS)*

MDEP JURISDICTIONAL STREAM CHANNEL *(REQUIRES 75' SETBACK FOR CONSTRUCTION/SOIL DISTURBANCE)*

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.

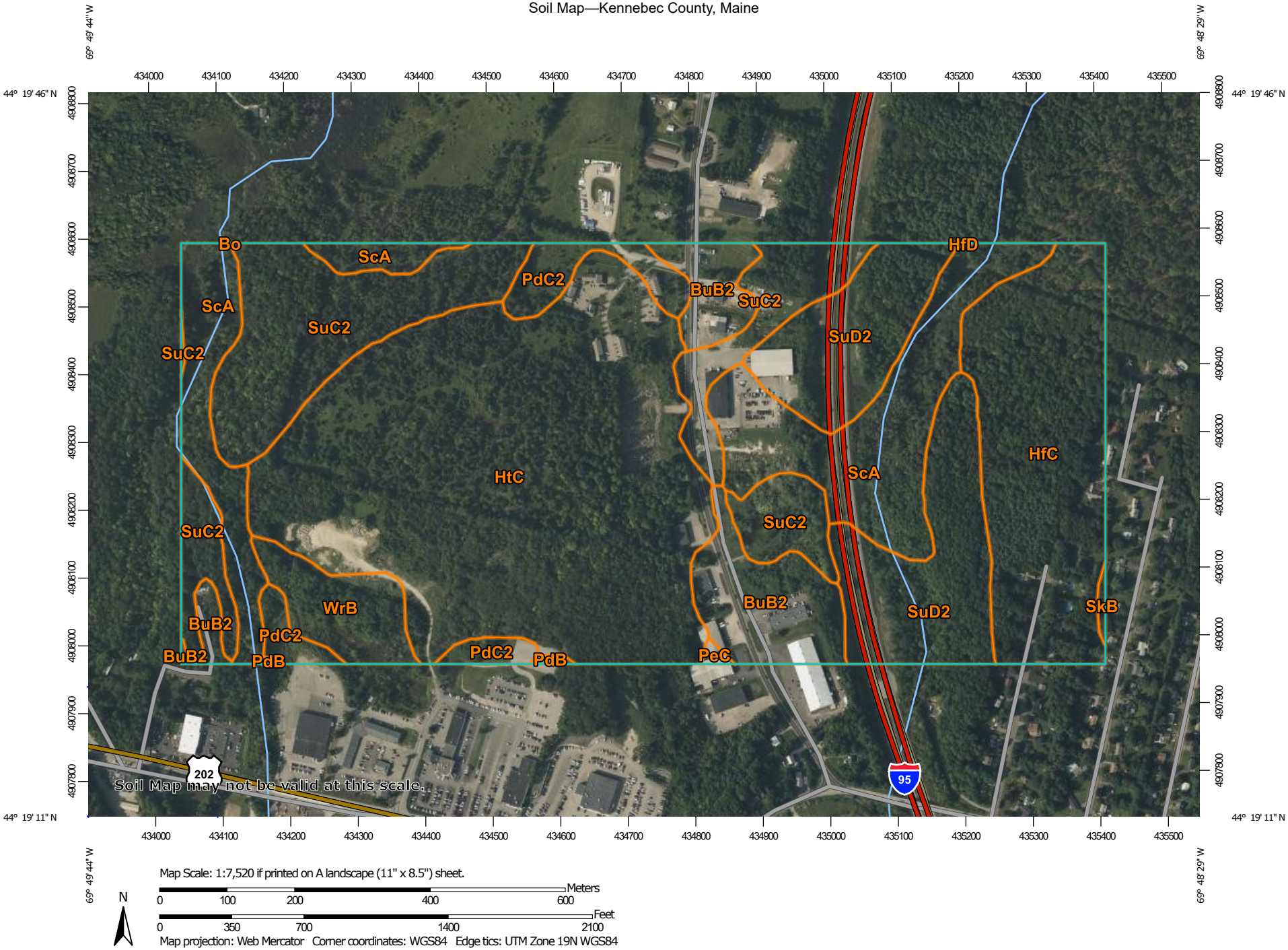
WETLAND DELINEATION PLAN

PREPARED FOR
JAMES & WHITNEY, CO.
96 LEIGHTON ROAD
(MAP 9, LOT 18D)
AUGUSTA, MAINE

LONGVIEW PARTNERS, LLC
ENVIRONMENTAL PERMITTING SPECIALISTS

DRAFT:	SCALE:	CHECKED:	PLAN DATE:
BO	1" = 20'	JL	5/13/22

Soil Map—Kennebec County, Maine



Map Scale: 1:7,520 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kennebec County, Maine
Survey Area Data: Version 21, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 11, 2021—Oct 29, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

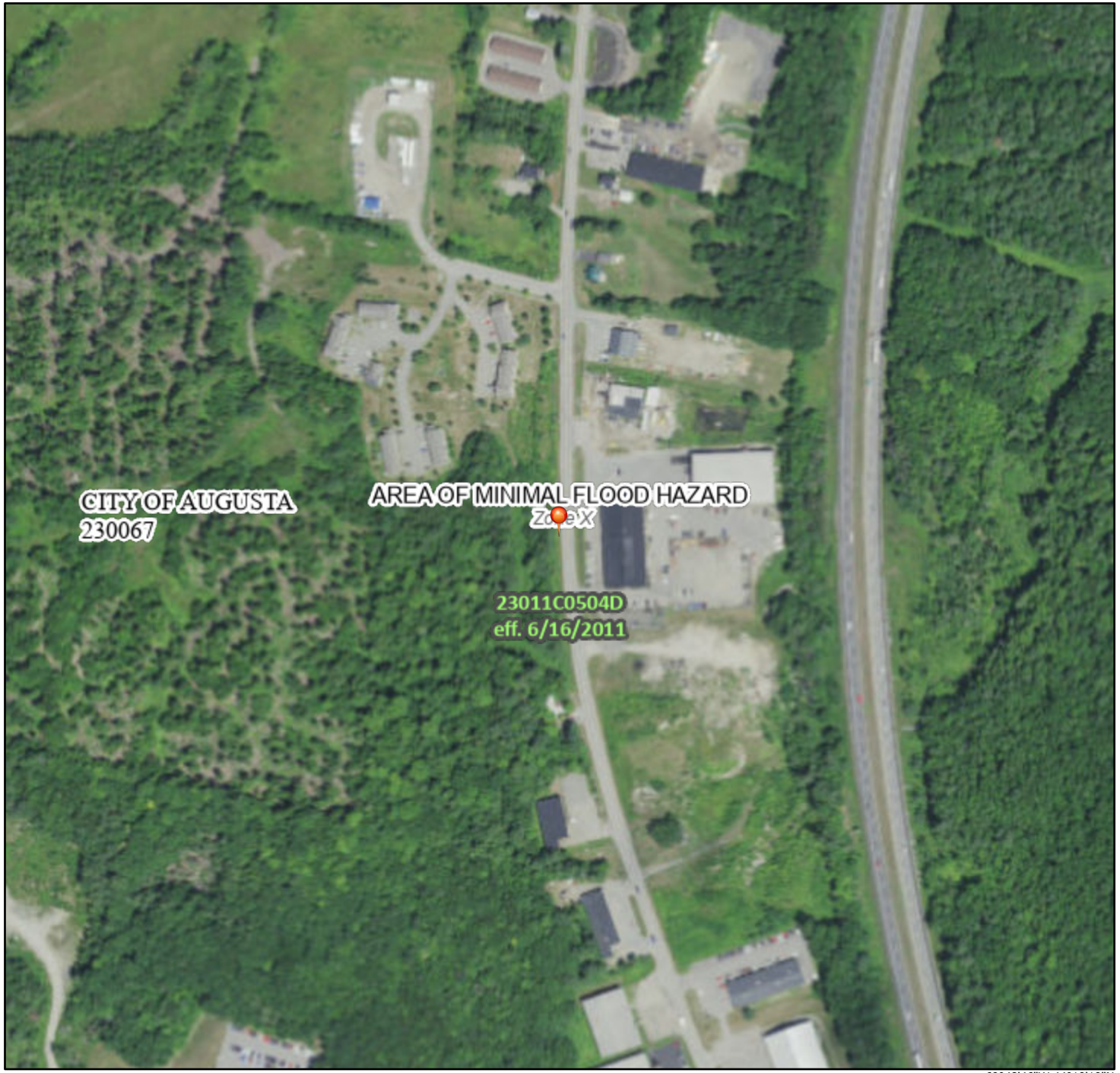
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bo	Biddeford mucky peat, 0 to 3 percent slopes	0.0	0.0%
BuB2	Lamoine silt loam, 3 to 8 percent slopes	13.7	6.5%
HfC	Hartland very fine sandy loam, 8 to 15 percent slopes	27.0	12.8%
HfD	Hartland very fine sandy loam, 15 to 25 percent slopes	0.0	0.0%
HtC	Lyman-Abram-Rock outcrop complex, 8 to 15 percent slopes	70.9	33.6%
PdB	Paxton-Charlton fine sandy loams, 3 to 8 percent slopes	0.2	0.1%
PdC2	Paxton-Charlton fine sandy loams, 8 to 15 percent slopes, eroded	6.5	3.1%
PeC	Paxton-Charlton very stony fine sandy loams, 8 to 15 percent slopes	0.2	0.1%
ScA	Scantic silt loam, 0 to 3 percent slopes	28.8	13.6%
SkB	Scio very fine sandy loam, 3 to 8 percent slopes	0.3	0.1%
SuC2	Suffield silt loam, 8 to 15 percent slopes, eroded	31.8	15.1%
SuD2	Suffield silt loam, 15 to 25 percent slopes, eroded	25.3	12.0%
WrB	Woodbridge fine sandy loam, 3 to 8 percent slopes	6.2	2.9%
Totals for Area of Interest		**211.0**	**100.0%**

National Flood Hazard Layer FIRMette

FEMA

69°49'23"W 44°19'45"N



69°48'46"W 44°19'19"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/22/2022 at 11:10 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

JUDITH CAMUSO
COMMISSIONER

February 8, 2023

James Coffin
E.S. Coffin
432 Cony Road, PO Box 4687
Augusta, ME 04330

RE: Information Request – 96 Leighton Road LLC Project, Augusta

Dear James:

Per your request received on December 30, 2022, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *96 Leighton Road LLC* project in Augusta.

Our Department has not mapped any Essential Habitats or inland fisheries habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bat Species – Of the eight species of bats that occur in Maine, the three *Myotis* species are protected under Maine's Endangered Species Act (MESA) and are afforded special protection under 12 M.R.S §12801 - §12810. The three *Myotis* species include little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are listed as Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence it is likely that several of these species occur within the project area during migration and/or the breeding season. However, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

Significant Wildlife Habitat

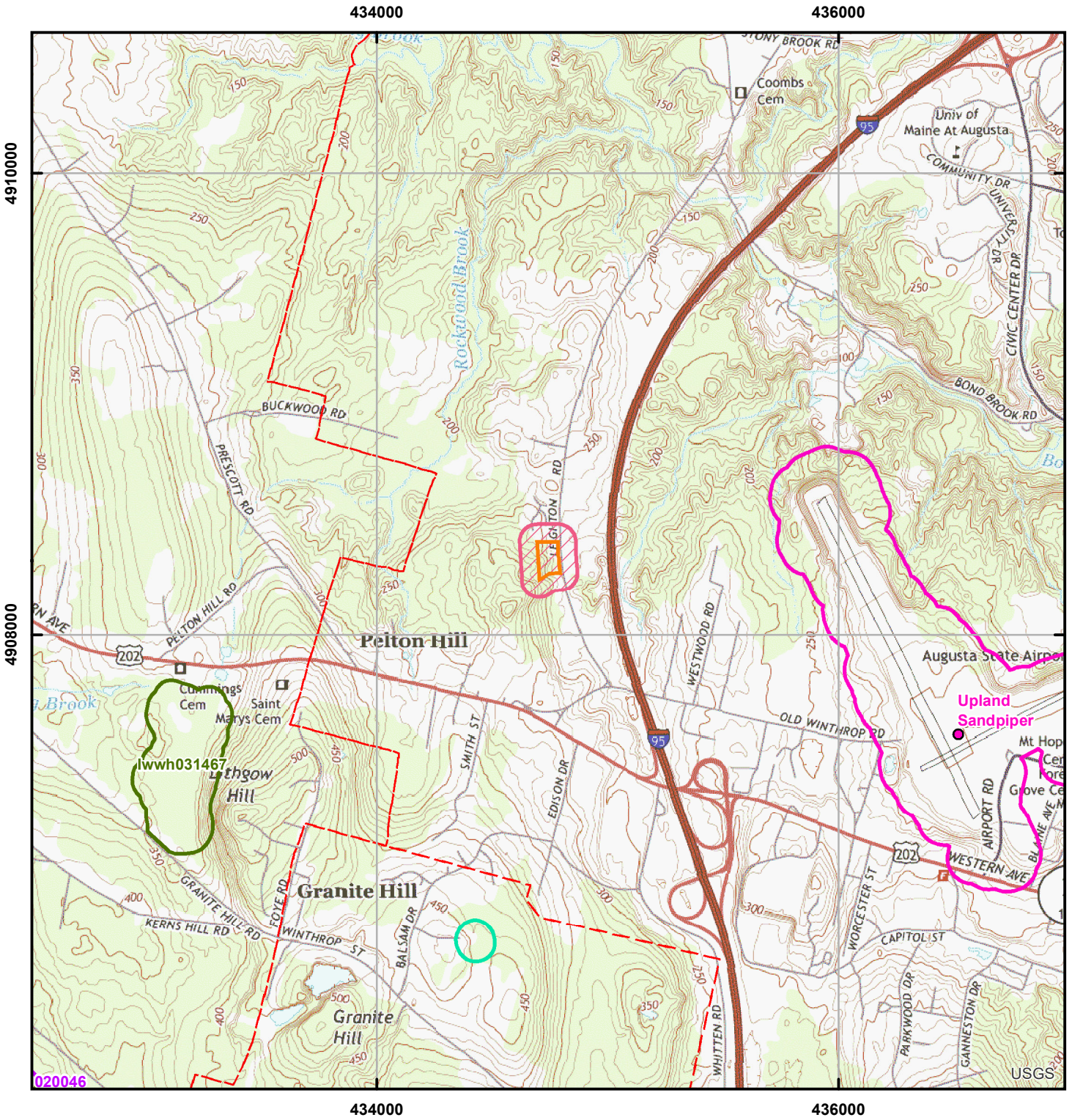
Significant Vernal Pools - At this time MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs subject to protection under the Natural Resources Protection Act (NRPA) within the project area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program, Maine Department of Marine Resources, and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

Becca Settele
Wildlife Biologist



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: 96 Leighton Road LLC, Augusta (Version 1)

Miles

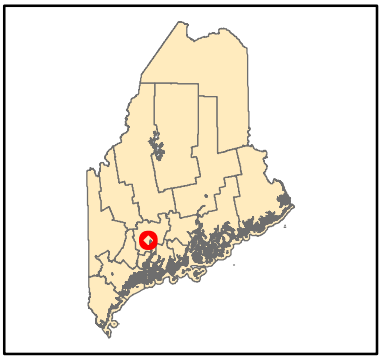
0 0.125 0.25 0.5 0.75 1

Projection: UTM, NAD83, Zone 19N

Date: 12/30/2022

Maine Department of Inland Fisheries and Wildlife

- ProjectSearchAreas - All Versions
- Maine Cliff and Talus Areas
- Deer Winter Area
- LUPC p-fw
- Cooperative DWAs
- Seabird Nesting Islands
- Shorebird Areas
- Inland Waterfowl and Wading Bird
- 2008 Iwwh - Shoreland Zoning
- Tidal Waterfowl and Wading Bird
- Significant Vernal Pools
- Environmental Review Polygons
- Roseate Tern
- Piping Plover and Least Tern
- Aquatic ETSc - 2.5 mi review
- Rare Mussels - 5 mi review
- Maine Heritage Fish Waters
- Arctic Charr Habitat
- Redfin Pickerel and Swamp Darter Habitats - buffer100ft
- Special Concern occupied habitats - 100ft buffer
- Wild Lake Trout Habitats



City of Augusta, Maine
Department of Public Works

February 7, 2023

James Coffin, P. E.
E. S. Coffin Engineering & Surveying, Inc.
P.O. Box 4687
432 Cony Road
Augusta, ME 04330

RE: 96 Leighton Road, LLC
96 Leighton Road, Tax Map 9, Lot 18D
Augusta, Maine 04330

Dear Jim,

This is in response to your request, dated January 16, 2023, for adequate solid waste disposal capacity for the development of 39,375 square feet of self-storage buildings to be located on 96 Leighton Road in Augusta.

The City of Augusta owns and operates the Hatch Hill Solid Waste Facility located on South Belfast Avenue. This is a regional facility that serves Augusta and eight surrounding communities. Approximately 45,000 tons of material are received and either landfilled or recycled annually. In 2001, the City started placing waste in Expansion III, our newest landfill expansion, which has an estimated remaining life of 4 years based on projected waste volumes. We are in the process of licensing additional capacity at this site. Sufficient capacity is available in Expansion III to accommodate the waste that would be generated from this project.

If you have any questions or need more information, please feel free to contact me at 626-2435.

Sincerely,

Lesley

Lesley Jones, P. E.
Director of Public Works

Physical Address:
Augusta Public Works
55 North Street, Augusta, ME 04330

Mailing Address:
Augusta Public Works
16 Cony Street, Augusta, ME 04330-5298

Tel (207) 626-2435 Fax (207) 626-2437 TDD (207) 626-2370

CITY OF
AUGUSTA
FIRE DEPARTMENT
16 Cony Street, Augusta, ME 04330 ♦ Phone: (207) 626-2421 ♦ Fax: (207) 626-2424

E.S. Coffin

96 Leighton Road, LLC
96 Leighton Road
Augusta, Maine

James, in regards to the above listed project for 96 Leighton Road, LLC, I see no issues with the outlined project. I have no concerns outside the City of Augusta ordinances, as always I suggest a knox box for rapid entry if the location falls outside the ordinance of a Sprinkler and alarm system.

Thanks for allowing the input.

Chief Dave Groder

Augusta Fire Department.

Chief Dave Groder ♦ (207) 692-7350♦ dave.groder@augustamaine.gov

AUGUSTA POLICE DEPARTMENT
33 Union Street
Augusta, Maine
04330

Jared J. Mills
Police Chief

Kevin D. Lully
Deputy Chief

January 17, 2023

James E. Coffin, P.E.
E.S Coffin Engineering and Surveying
P.O. Box 4687
Augusta, Maine 04330

Mr. Coffin,

I have reviewed the proposal to develop a parcels of land located on the Leighton Road. The applicant plans to erect multiple self-storage buildings at this location. This parcel is identified as Lots 18D on Tax Map 9 in the City of Augusta Tax Maps. This 3.49 acre parcel is in the Planned Development (PD) District of the City's zoning map. I have no safety issues or concerns.

Sincerely,

Jared J. Mills

432 Cony Road
P.O. Box 4687
Augusta, ME 04330

E.S. COFFIN ENGINEERING & SURVEYING, INC.

(207) 623-9475
Fax (207) 623-0016
1-800-244-9475

December 30th, 2022

Kirk Mohney
Maine Historic Preservation Commission
55 Capitol Street
State House Station 65
Augusta, Maine 04333

Subject: 96 Leighton Road, LLC
96 Leighton Road
Augusta, Maine

Dear Kirk:

96 Leighton Road, LLC, herein called the applicant is proposing to erect 39,375 sf of self-storage buildings at 96 Leighton Road in Augusta. The parcel is identified as Lot 18D on Tax Map 9 in the City of Augusta tax maps. The 3.49-acre parcel is in the Planned Development (PD) District as shown on the City's Zoning Map. A site location map (SLM) is provided for your use.

Please identify any properties in the area of historic, architectural, or archaeological significance that this project may impact and if you should have any questions or concerns; please do not hesitate to contact me.

Sincerely,

James Coffin

James E. Coffin, PE

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney

Kirk F. Mohney,
State Historic Preservation Officer
Maine Historic Preservation Commission

1/18/23
Date

January 19, 2023

Mr. Jim Coffin, P.E.
432 Cony Road
P.O. Box 4687
Augusta, Maine 04330-4687

Sent via email: jcoffin@coffineng.com

RE: 96 Leighton Road, LLC – 96 Leighton Road, Augusta, Maine

Dear Jim,

This letter addresses the capacity request you made to the District regarding the development of a 3.49 acre site on the west side of Leighton Road opposite the Capital West complex into a 39,375 sf self-storage facility. This development is located on Map 9, Lot 18D.

The proposed facility will include a small office building containing 1 bathroom.

The District has adequate capacity of safe drinking water within its system to supply the proposed facility with its domestic water needs based on the above description. Static water pressure in this area is 109 psi.

The District also has adequate capacity within its sanitary sewer system to accept discharge from this facility based on the above information.

The sewer line running through the property from the Capital Village development is a private line until it connects to the District's SMH-3724 at Leighton Road. A utility easement will need to be developed between the two parties for access and maintenance of this private line. A copy of the registered easement must be submitted to the District.

The District will require the sewer service from the proposed office building to enter SMH-3724 at Leighton Road.

Thank you for your time. Please feel free to contact me at 207-622-3701, Ext 4278 or email at mmorey@gaud.ws with any questions you may have.

Sincerely,

Michael A. Morey
Engineering Services Manager

CC: Andy Begin, P.E.
Brian Tarbuck, P.E.

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

December 30, 2022

James Coffin
ES Coffin Engineering and Surveying
PO Box 4687
Augusta, ME 04330

Via email: jcoffin@coffineng.com

Re: Rare and exemplary botanical features in proximity to: #2022-093, 96 Leighton Road, Augusta, Maine

Dear Mr. Coffin:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received December 30, 2022 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Augusta, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. Based on the information in our files and the landscape context of this project, there is a low probability that rare or significant botanical features occur at this project location.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
90 BLOSSOM LANE, DEERING BUILDING

PHONE: (207) 287-8044
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
207-287-8044 | lisa.st.hilaire@maine.gov

432 Cony Road
P.O. Box 4687
Augusta, ME 04330

E.S. COFFIN ENGINEERING & SURVEYING, INC.

(207) 623-9475
Fax (207) 623-0016
1-800-244-9475

February 1st, 2023

City of Augusta
Mr. Tyler Pease, City Engineer
One City Center
Augusta, Maine 04330

Subject: Traffic Report
96 Leighton Road, LLC

Dear Tyler,

96 Leighton Road, LLC, herein called the applicant is proposing to erect 39,375 sf of self-storage buildings at 96 Leighton Road in Augusta. The parcel is identified as Lot 18D on Tax Map 9 in the City of Augusta tax maps. The 3.49-acre parcel is in the Planned Development (PD) District as shown on the City's Zoning Map. A site plan is provided for your use.

There will be 39,375 sf of new self-storage buildings. Traffic is required to be evaluated under the Land Use Ordinance. The 8th Edition of the Institute of Transportation Engineers (ITE) Manual, have a "Mini-Warehouse" section that is described as buildings in which a number of storage units are rented for the storage of goods. They are typically referred to "self-storage" facilities. Each unit is physically separated from other units, and access is usually provided through an overhead door or other common access point. The peak hour trips generated are calculated from the ITE Manual (8th addition) under **"Mini Warehouse"** and is shown below:

Based on Building Size (39,375 sf):
Weekday AM Peak Hour Rate = 0.28
(39,375 sf/1,000 sf) x 0.28 = 11.0 peak hour trips.

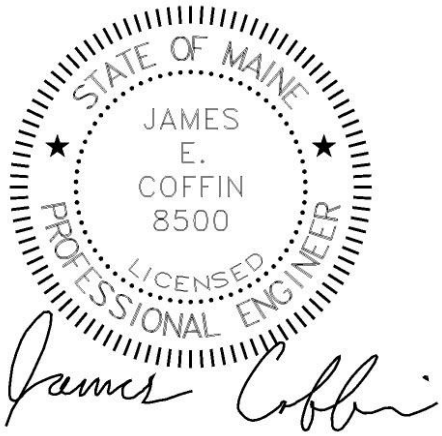
Weekday PM Peak Hour Rate = 0.29
(39,375 sf/1,000 sf) x 0.29 = 11.4 peak hour trips.

Maximum Peak Hour Trips = 11.4 (Weekday PM)

The maximum generator based on building size occurs during the PM peak hour (11.4 peak hour trips) for the proposed project. The project will not require a turning movement permit from the MDOT because there are less than 100-trips. The project will not cause unreasonable public road congestion and if you should have any questions or concerns, please do not hesitate to contact me at 623-9475.

Respectfully Submitted,

James E. Coffin, PE



Mini-Warehouse
(151)

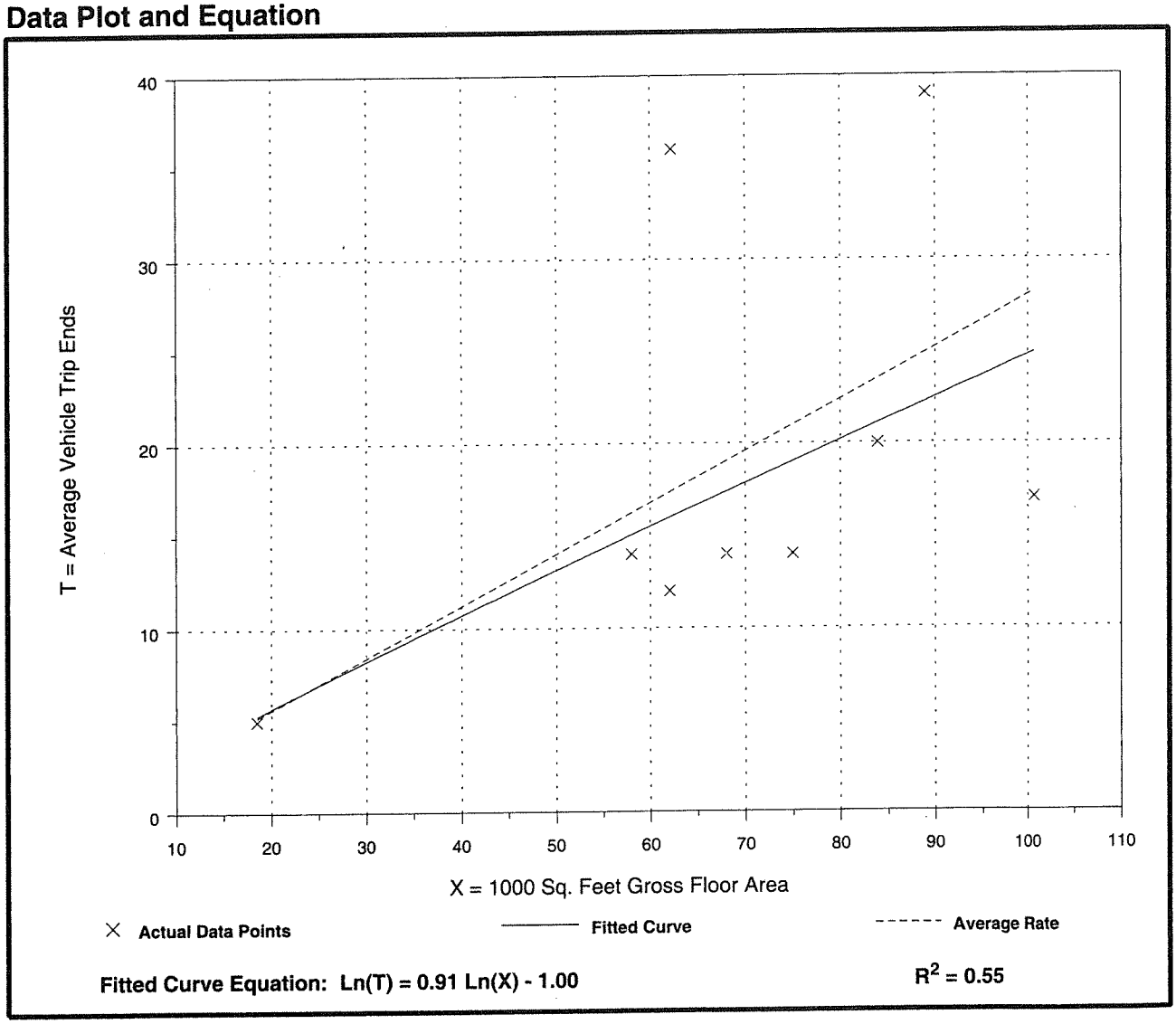
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
A.M. Peak Hour of Generator

Number of Studies: 9
Average 1000 Sq. Feet GFA: 69
Directional Distribution: 48% entering, 52% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.28	0.17 - 0.58	0.54

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.91 Ln(X) - 1.00

R^2 = 0.55

Mini-Warehouse
(151)

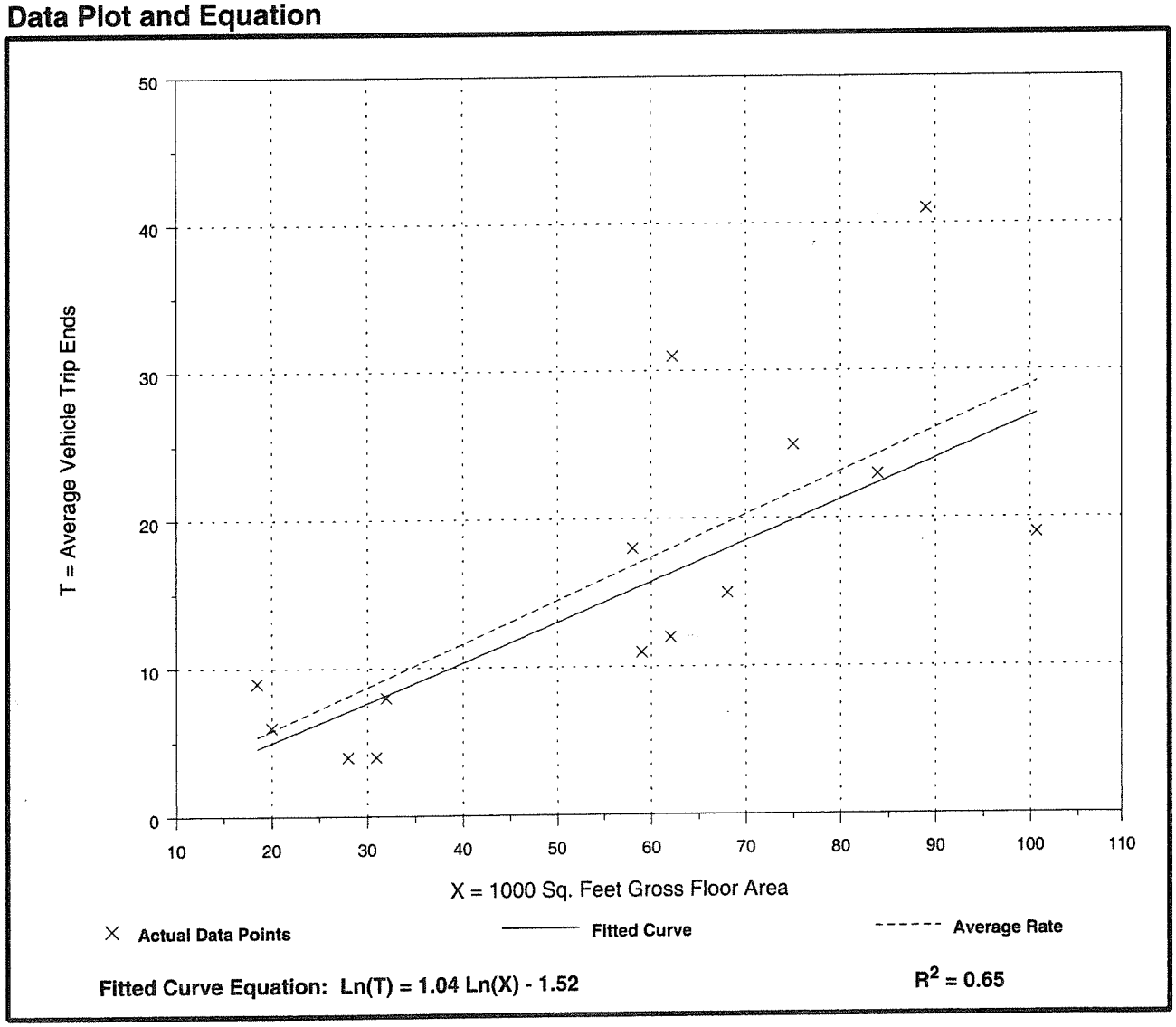
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
P.M. Peak Hour of Generator

Number of Studies: 14
Average 1000 Sq. Feet GFA: 56
Directional Distribution: 53% entering, 47% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.29	0.13 - 0.50	0.54

Data Plot and Equation



Fitted Curve Equation: $Ln(T) = 1.04\ Ln(X) - 1.52$

$R^2 = 0.65$

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RESOURCES

FOR DEP USE
L-_____
ATS# _____
FEES PAID _____
DATE RECEIVED _____

STORMWATER APPLICATION FORM

PLEASE TYPE OR PRINT IN INK

This application is for (Check the one that applies):	☑ New application ☐ Amendment		
1. Name of Applicant:	96 Leighton Road, LLC	**5. Name of Agent:**	E.S. Coffin Engineering & Surveying
2. Applicant's Mailing Address:	55 Winthrop Street Hallowell, ME 04347	**6. Agent's Mailing Address:**	PO Box 4687 Augusta, ME 04330
3. Applicant's Phone #:	207-242-2510	**7. Agent's Phone #:**	207-623-9475
4. Email address (REQUIRED-license will be sent via email:	Eric James eric@jameswhitneyco.com	**8.E-mail address (REQUIRED-license will be sent via email**	jcoffin@coffineng.com
9. Location of Project: (Road, Street, Rt.#)	96 Leighton Road	**10. Town:**	Augusta
		11. County:	Kennebec
12. Type of Direct Watershed: (Check all that apply)	☐ Lake not most at risk ☐ Lake most at risk ☐ Lake most at risk, severely blooming ☑ River, stream or brook ☑ Urban impaired stream ☑ Freshwater wetland ☐ Coastal wetland ☐ Wellhead of public water supply	**13. Amount of Disturbed Area:**	Total Amt.= 2.92 acres
		14. Amount of Developed Area:	☐ 1 or more acres, but less than 5 acres ☐ 5 acres or more Total Amt.= 2.82 acres
		15. Amount of Impervious Area:	☐ less than 20,000 sq. ft. ☐ 20,000 sq. ft. to 1 acre ☑ 1 to 3 acres ☐ 3 or more acres Total Amount of Imp.= 1.9 acres
16. Applicable Standards: (Check all that apply)	☐ Stormwater PBR ☑ Basic standards ☑ General standards: BMP ☐ General standards: phosphorus ☐ Flooding standard ☑ Urban impaired stream standards	**17. Type of Stormwater Control:**	☐ Vegetative (e.g. buffers) ☑ Structural (e.g. underdrained filters, ponds, infiltration structures)

18. Exceptions &/or Waivers Requested:	**BMP Standards ▼**	**Urban impaired stream standard ▼**	**Flooding Standard ▼**
	☐ Pretreatment measures ☐ Discharge to ocean/major river segment ☐ Linear portion of project ☐ Utility corridor ☐ Redevelopment	☐ Developed area not landscaped or impervious ☐ Redevelopment	Discharge to ocean or major river segment ☐ Insignificant increase in peak flow

19. Brief Project Description:	The applicant is proposing to erect 39,375 sf self-storage buildings with associated paved areas. The project flows into Bond Brook, which is considered a stream most at risk from development.				
20. Size of Lot or Parcel:	☐ ____ sq. ft., or	☑ 3.49 acres	**UTM Easting:** 69-49-06	**UTM Northing:**	44-19-31
21. Title, Right or Interest:	☑ own	☐ lease	☐ purchase option	☐ written agreement	

22. Deed Reference Numbers:	Book#: 14353 Page: 195	**24. Map and Lot Numbers:**	Map #: 9	Lot#: 18D	
23. DEP Staff Previously Contacted:	N/A	**25. Project started prior to application?**	☐ Yes ☑ No	**Completed?**	☐ Yes ☑ No

SIGNATURES / CERTIFICATIONS ON PAGE 2

26. Resubmission of Application?	☐ Yes➔ ☑ No	**If yes, previous application #**		**Previous project manager:**	
27. Written Notice of Violation?	☐ Yes➔ ☑ No	**If yes, name of DEP enforcement staff involved:**			
28. Detailed Directions to the Project Site:		**From the I195/Western Ave x-section travel west on Western Ave 0.4 mi. Take a right on Old Winthrop Rd and go 0.2 mi and take a left on Leighton Road. Travel 0.4 miles where the site is on the left.**			
29. Stormwater Permit by Rule Submissions▼		**30. Stormwater Application Submissions▼**			
☐ *This form (including signature page)* ☐ *Fee* ☐ *Topographic Map* ☐ *Plan or Drawing* ☐ *Photos of Area*		☑ This form (including signature page) ☑ Fee ☑ Proof of title, right or interest ☑ Certificate of good standing (if applicable) ☑ Photos of Area ☑ Copy of Public Notice		☑ Professional & Notice Certification ☑ Basic standards submissions ☑ General standards submissions ☐ Flooding standard submissions ☐ Other standard submissions ☐ Compensation Fee (if required)	
31. FEES, Amount Enclosed:		$750			
Does the agent have an interest in the project? If yes, what is the interest?: ☐ *Yes➔* ☑ *No*					

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following:

CERTIFICATIONS/ SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this applicatio by

E-mailing the decision to the electronic address located on the front page of this application (see #4 for the applicant and #9 for th agent."

Signed: _____ **Title:** Civil Engineer **Date:** January 25, 2023

Notice of Intent to Comply with Maine Construction General Permit	**With this Stormwater Law application form and my signature below, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.** **Signed:** _____ **Date:** January 25, 2023

NOTE: If a Notice of Intent is required, you must file a Notice of Termination (attached as Form G) within 20 days of completing permanent stabilization of the project site.

C. General Standards

1. **Narrative:**

96 Leighton Road, LLC, herein called the applicant is proposing to erect eight self-storage buildings at 96 Leighton Road in Augusta. The parcel is identified as Lot 18D on Tax Map 9 in the City of Augusta tax maps. The 3.49-acre parcel is in the Planned Development (PD) District as shown on the City's Zoning Map.

There are not any buildings or structures on site and the applicant is proposing to construct 39,375 sf of self-storage buildings and a 720-sf office building. The applicant will relocate the existing driveway to the west as shown on the site plan.

The topography from Leighton Road to the north property line is steep with 15-17% slopes. The site has been cleared and the ground cover consists mainly of meadow ground cover. The site will essentially be made into a large plateau with each building sloped at 1% to allow runoff to drain between buildings without having to use catch basins in these areas.

The wetlands were delineated by Longview Partners, LLC and there are 10,455 sf of wetlands on site of which 3,400 sf will be disturbed as a result of the project. The soils are classified as Lyman-Abram-Rock outcrop, a Type "D" Hydrologic Soil Group (HSG) that is considered poorly drained and Suffield, which is a Type "C" HSG. SW Cole Engineering provided analysis of test pits on site including one in the proposed underdrained soil filter (UDSF).

The parcel is not within the 100-year flood zone and flows into an unnamed stream and then into Bond Brook, which is considered a stream most at risk from development. The DEP stormwater permit application threshold is 20,000 sf of new impervious area or five acres or more of developed area for the project.

As mentioned above the applicant will loam and seed the existing driveway and construct a new one towards the south side of the site. This location is 5' higher that greatly reduces the amount of excavation (blasting) needed on site.
There be an increase in impervious area of 84,850 sf and a landscape area of 38,110 sf. The total developed area for the project will be 122,960 sf and the disturbed area will be 127,310 sf (2.92 acres).

2. **Drainage Plans**

Pre- and Post-Development Plans are included in addition to Site Plan.

3. **Calculations:**

A. Water Volume:

Impervious Treatment:

Post-Development Impervious Area Increase = 84,850 sf

Treatment Required:

84,850 sf x 0.95 = 80,608 sf

Actual Impervious Treated = 84,420 sf

Imp. area treated = 84,420 sf > 80,608 sf (meets standard)

% Treated = (84,420 sf/84,850 sf) x 100 = 99.5%

Developed Treatment:

Proposed Post Developed Area = 122,960 sf

Actual Treated Area = 115,590 sf

Treatment Required:

115,590 sf x 0.80 = 92,472 sf

Developed area treated = 115,590 sf > 92,472 sf (meets standard)

% Treated = (115,590 sf/122,960 sf) x 100 = 94.0%

UDSF Sizing:

1) Pond #1:

Impervious Area: 84,420 sf

84,420 sf x (1"/12) = 7,035 cf

Developed (Landscaped) Area = 31,170

31,170 sf x (0.4"/12) = 1,039 cf

Total Volume req'd: 7,035 cf + 1,039 cf = 8,074 cf

Actual Pond #1 Volume (elev. 224.5') = 9,100 cf

8,074 cf < 9,100 cf therefore the water quality standard is met.

Pond Surface Area must be > 5% of the contributing impervious drainage area:

Pond Surface Area = 84,420 x 0.05 = **4,221 sf < 5,200 sf (meets standard) ***

Infiltration Area and Thickness:

Infiltration surface area > 5% of the imperv. area + 2% of landscaped area.

Impervious Area = 84,420 sf

Landscaped Area = 31,170sf

Total Area Req'd = (84,420 sf x 0.05 + 31,170sf x 0.02) = 4,844 sf

Actual Pond #1 Surface Area (elev. 223.0') = 5,200 sf

5,200 sf > 4,844 therefore the standard is met.

Sediment Forebay Calculations:

Sediment Forebay Vol. = Area to be Sanded * 500 lbs/ac-storm / 90 lbs/cf * 10 storms/yr.

Sediment Forebay 5 (CB #5):

Area to be sanded = 37,845 sf

Req. Sediment Forebay Vol. = (37,845/43,560) * (500 / 90) * 10 = **48.3 cf**

Actual Sediment Forebay Vol. (see Hydro-Cad output) = **150 cf**

Sediment Forebay 6 (CB #6):

Area to be sanded = 7,200 sf

Req. Sediment Forebay Vol. = (7,200/43,560) * (500 / 90) * 10 = **9.2 cf**

Actual Sediment Forebay Vol. (see Hydro-Cad output) = **10 cf**

Outlet Control Structure orifice sizing:

Pond #1 (UDSF):

Calculated from filter area:

Pond surface area at the bottom (X) = 5,325 sf

Y = Orifice diameter = 0.035X^0.4599

Y = 0.035(5,200 sf)^0.4599

Y = **1.8"**

Calculated from water quality volume:

Water quality volume (X) = 8,074 cf

Y = 0.0137X^0.5372

Y = 0.0137(8,074 cf)^0.5372

Y = **1.7"**

B. Buffer Sizing:

This section is not applicable.

C. Calculation Table and Subcatchment Plan:

A table is provided on the Post-Development Plan (POST) along with each treatment measure and subcatchment depicted.

4. Test Pit Logs:

Summit Geo-Engineering has provided a test pit log and a report for the test pit.

5. Details, Designs & Specifications:

A. Wet Ponds:

This section is not applicable.

B. Vegetated Soil Filters:

The UDSF is shown on the site plan and a section is included on Sheet C-6 along with pertinent details of the pond.

C. **Infiltration:**
This section is not applicable.

D. **Buffers:**
This section is not applicable.

6. **Phosphorus Export Calculations:**
This section is not applicable.

7. **Maintenance Contract:**
On Sheet C-6 under Construction Oversight Notes it states that the applicant will retain the services of a professional engineer to inspect the construction and stabilization of all stormwater management structures to be built as part of the project. If necessary, the inspecting engineer will interpret the construction plans for the contractor. Once all stormwater management structures are constructed and stabilized, the inspecting engineer will notify the department in writing within 30 days to state that the structures have been completed.

D. Flood Standard Submissions

1. Modeling assumptions:

The "Hydro Cad" computer program was used to determine the peak storm water runoff for the pre- and post-development conditions. Hydro Cad is a storm water modeling system, which utilizes the TR-20 method developed by the Soil Conservation Service (SCS).

The design assumptions used for this project are:
Design storm: 24-hour, Type III rainfall distribution.

Rainfall: 24-hour precipitation values from Appendix H of DEP Chapter 500 (revised in August 2015):

2-year storm = 2.8 inches
10-year storm = 4.2 inches
25-year storm = 5.2 inches
50-yeat storm = 6.1 inches

Site-specific parameters for the project are listed on the next page:
Soils: Soils information to determine the hydrologic soil group for the site, are derived from the Soil Survey of Kennebec County by the United States Department of Agriculture Soil Conservation Service. The soils and hydrologic group are listed below:

Soil Classification	Hydrologic Group
Suffield (SuC2)	"C"
Lyman-Abram (HtC)	"D"

Ground Cover:
Pre-& Post Development: The watershed ground cover is modeled as impervious, woods and lawn.

Cover Description	Curve Number:
Impervious	98
Lawn "C"	74
Lawn "D"	80
Woods "C"	70
Woods "D"	77

Pre-project analysis: The hydrologic study evaluates the parcel that includes one sub area, which are depicted the plan labeled "PRE". A study point is evaluated for the 2-, 10- , 25- and 50-year peak storm events (see study point node).

Post-project analysis: ten sub areas are analyzed in the post-development condition, which is shown on the plan entitled "POST". Summary tables showing the input values and resulting peak flows for sub areas and ponds are also included at the end of the report.

The study point evaluates stormwater for the project with the four peak storm events being evaluated for the pre- and post-development condition. The pre- and post-development results for the study point is compared in the table below:

STUDY POINT (SP1)			
Event	**PRE-DEV.**	**POST DEV.**	**Difference**
2-year	2.54 cfs	0.70 cfs	- 1.84 cfs
10-year	5.59 cfs	2.11 cfs	- 3.48 cfs
25-year	7.97 cfs	3.65 cfs	- 4.32 cfs
50-year	10.19 cfs	5.07 cfs	- 5.12 cfs0

From the table above there are decreases in flows for the 2-, 10-, 25- and 50-year peak storm events. The underdrained soil filter (UDSF) provides adequate stormwater quantitative treatment for the project as well as meeting the MDEP qualitative standards.

If you should have any questions, please do not hesitate to contact me.

Respectfully Submitted,

James Coffin

James E. Coffin, PE

Foundation Details

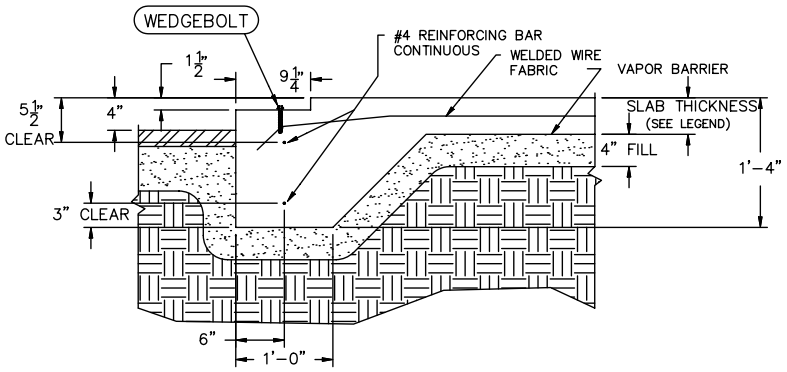
TBS TRACHTE Building Systems

800-356-5824 • trachte.com • tbs@trachte.com

WATCH OUR VIDEO
CONCRETE AND GRADING AT
trachte.com

Floating Slab Detail

This detail is used in all non-frost areas and may also be used in some frost areas (Call your local building dept. to see if they accept this design). There is no footing with the foundation. The concept is that the whole foundation moves up and down with the frost. The thickness of slab changes due to the snow and wind loads. Trachte can only assume a 1,500 lb soil bearing capacity. If you have a soil report that states a higher capacity, this will impact the thickness of the foundation.



1 FLOATING SLAB DETAIL, NOTCHED

FLTN
SCALED UP 6X

Forms must be straight, level, and have adequate bracing. A 2" x 10" is used to form the required notch in the concrete. Note: Photos only suggest how to pour the floating slab foundation.

video at trachte.com

Look at our video Concrete and Grading: The Foundation to a Great Project.

A 2" x 10" form is attached with screws so it can be dismantled during the finishing stage.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

The inside of the 2" x 10" form is staked to keep the form level during the pour. The stake is removed while the concrete is still workable. The required steel reinforcement bases are installed prior to the 2" x 10" form installation.

If the building requires interior column footings, locations are specified on the foundation plan. Mark the locations and shovel out to the depth denoted on the foundation plan.

A vapor barrier is placed under the concrete. 6" x 6" W1.4 x W1.4 welded wire fabric is specified on the plan. If you would prefer fiber mesh or rebar, Trachte will have to re-design the foundation because fiber mesh or rebar requires a thicker foundation.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

A hand-held vibrator is used to work the concrete under the 2” x 10” form to help reduce the amount of air pockets.

The 2” x 10” form that shapes the notch must be removed while the concrete is still workable. If this is not done, there will be pock marks due to air pockets.

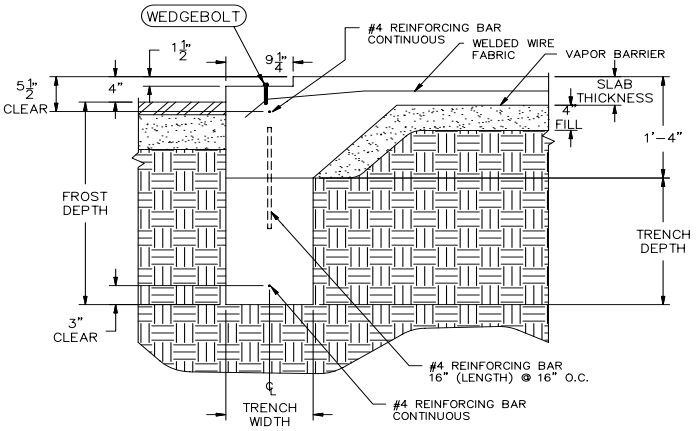
Curb edge the concrete to reduce chipping and hand trowel the notch to remove air pockets. Brush finishing the notch is also an option.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

This is an alternative method to form your notch in the foundation. It will eliminate a lot of labor since you can trowel-finish your notch without removing any wood.

Steel angles are another alternative method for forming the notch.



1 STANDARD TRENCH DETAIL, NOTCHED

TSTDN01

SCALED UP 6X

Trench Wall Foundations

This is a detail of Trachte's trenchwall foundation. The trench is poured to the depth of the frost line and the trench thickness can be either 8", 10", or 12" wide. The thickness of the slab changes due to the snow and wind loads. Trachte can only assume a 1,500 lb soil bearing capacity. If you have a soil report that states a higher capacity, it can impact the thickness of the foundation.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

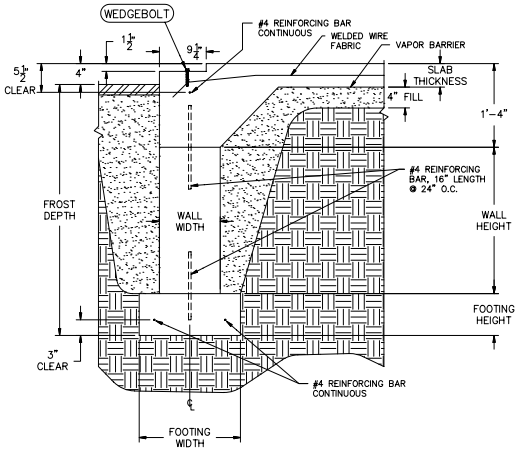
Dig a 12” wide trench in preparation for a 12” wide trench wall foundation.

The 12” wide trench is poured with #4 steel reinforcement bars protruding upward to anchor floor slabs. These bars are capped for safety.

Alternative to the two step trench wall: surround the 12” wide trench wall foundation with forms and pour all concrete at once. The wood form stops the pour at the 12” step down.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

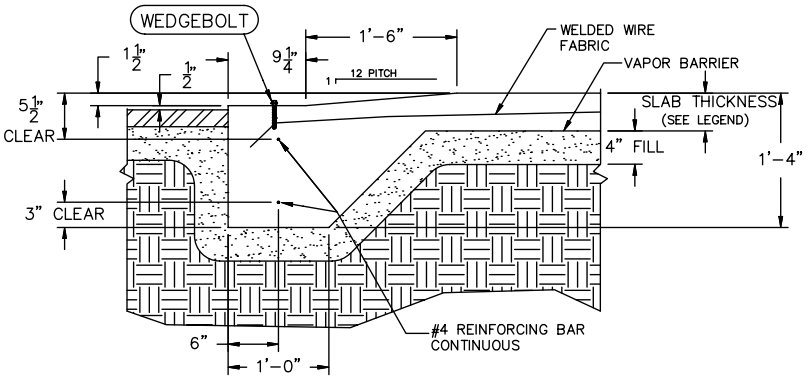


1 FROST WALL DETAIL, NOTCHED

FRSTN01
SCALED UP 6X

Frost Wall Foundations
The frost wall footing may be used in lieu of a trench wall footing. The footing is poured first, then forms are used for the walls. This system typically is more expensive than a trench wall foundation. This foundation is easiest to insulate.

The frost walls are poured, then the forms are taken off. Additional forms must be added to form the top portion of the slab and notch.



1B FLOATING SLAB DETAIL, ADA PITCH, NOTCHED

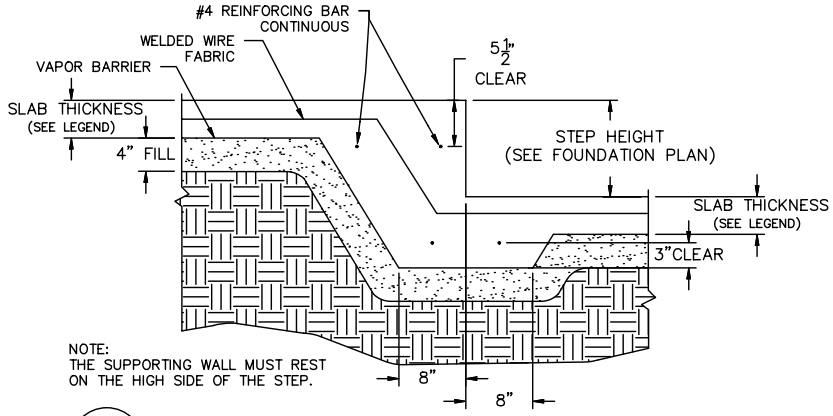
FLTADA
SCALED UP 6X

ADA Compliance
Units that are required to comply with the ADA (American Disability Act) must have the notch sloped at 1" and pitched to the finished floor height. Talk to your regional manager for details specific to your building code.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

An ADA unit once poured.



3 FLOATING SLAB DETAIL, STEP

STEPDOWN

SCALED UP 6X

Steps

If your building requires steps in the foundation, this detail illustrates how it is constructed.

Each section of foundation is poured to the next step.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

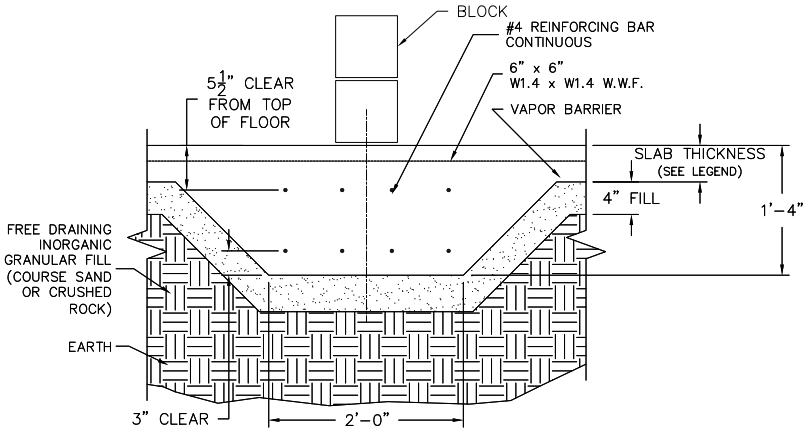
This photo depicts a finished building step. Stone or driveway base should be placed around the slab prior to arrival of building.

The finished stepped foundation.

A step may be added along the length of the building. The longitudinal step should be done in 6” increments. Trachte will design the building so that there is no step in the roof.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details



1 FIREWALL FOOTING DETAIL

Firewalls
If your building requires a block firewall, the foundation must be installed underneath the block.

The block firewall rests directly on the slab.

The finished foundation with a corner bollard (6" minimum) and finished pavement. It is recommended to have 1"- 3" from the bottom of the notch to the pavement. The ADA units must have pavement to within 1/2" of the bottom of the notch.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

Concrete Finishing
Once the concrete has set, mark and chalk line the foundation every 10' down the length of the building. The first line should be located 11' off the end wall so all the cuts are off the structural line. Note: Try to minimize the saw cut inside the interior hallways.

Saw cut the slab once along the width of the building and then every 10'-15' along the length. The center saw cut should not be placed on a structural line, or in the hallway if possible.

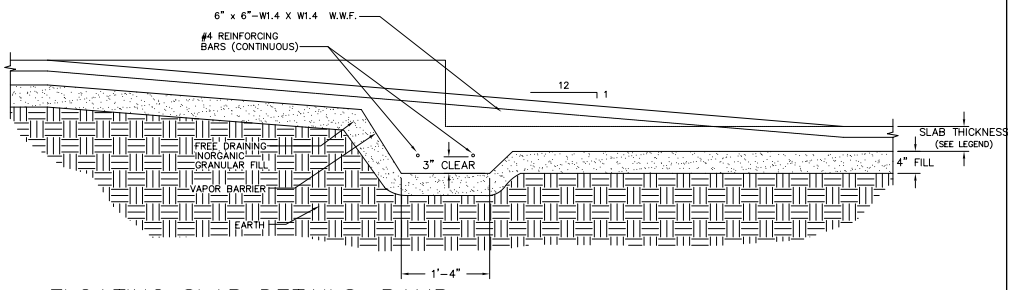
Saw cut should be located 12" off the structure line.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

A concrete sealer is applied to create a smooth, finished surface that is easier to clean and prevents spilled liquids from being absorbed.

The foundation is designed 2" wider than the building width. The added width allows for variations in the concrete. The foundation should be set out past the building by 1" as shown.



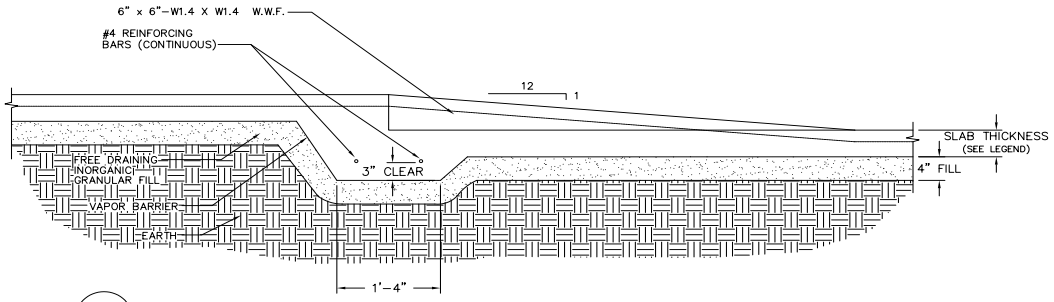
4 FLOATING SLAB DETAILS, RAMP INTERIOR SECTION THRU STEP

Ramps for Corridors

If you have a corridor in your building with a step in it, you must slope the corridor at a 1% grade. The typical detail is to center the ramp in the step.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

This ramp is centered in the step.



4 FLOATING SLAB DETAILS, RAMP INTERIOR SECTION AT STEP

Details of an alternative ramp, which starts from the top of the step and slopes to the lower finished floor.

This ramp started at the top of the step and slopes at a 1":12" slope to the lower finished floor.

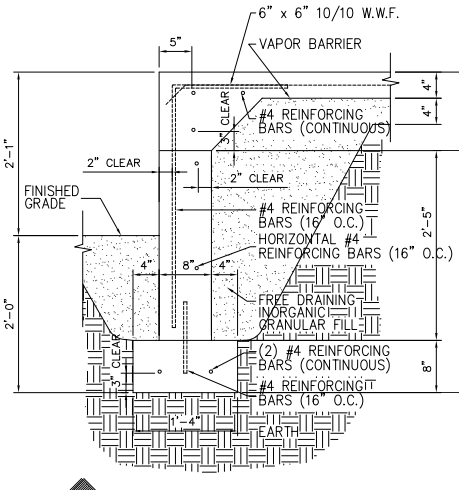
For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

Recessed Corridors
If the building has a recessed corridor, the foundation must be poured at a slope. Typically, the sloped area is poured after the slab is completed.

This photo shows a ramp in the foundation that is sloped back 5' for a recessed entryway. It will have an exterior swing door to access the interior corridor.

Stemwall Details
If the land elevation is lower than the foundation elevation, the building may require a stemwall to hold up the foundation. The height of the stemwall will be the difference between the land grade and foundation grade plus the frost depth.

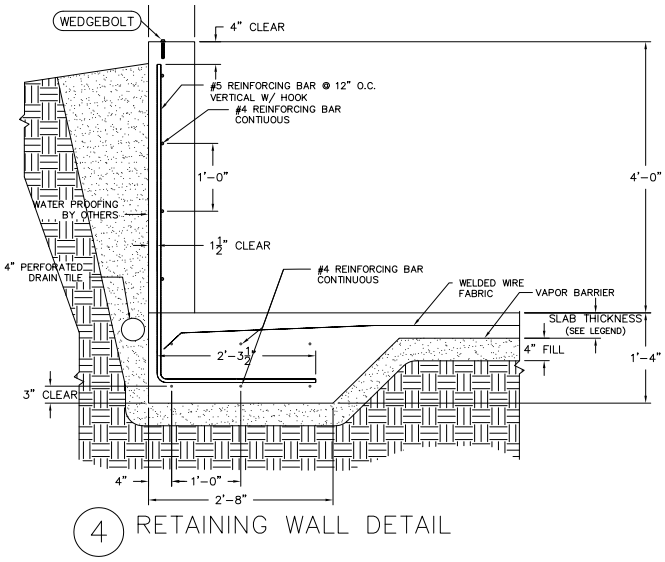


4/1 STEMWALL DETAIL
1"=1'-0"

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

Foundation Details

A finished stemwall.



4 RETAINING WALL DETAIL

Retaining Wall Details
If building into a hill, a retaining wall is needed to hold back the earth. It is highly recommended to have a soil report to minimize the retaining wall specifications.

A photo of a building built into a hill with a retaining wall.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

800.356.5824

Foundation Details

The retaining wall can also step with the foundation to conform to the slope of the land.

An inside view of the retaining wall.

video at trachte.com

Look at our video Erecting Your Building On A 1 Percent Slope.

Foundations Poured on a 1% Grade

Foundations may also be poured on a slope of up to 1%. This building is 150' long and the right side is 1'6" higher than the left. This option can eliminate steps, but you must hire a very competent concrete contractor to ensure success of the project.

For more information and details on Trachte self-storage systems, please contact your regional manager at 800-356-5824.

YOUR TRUSTED BREED
making it happen

ENGINEERING SERVICES

Blasting Plan

for

Eric James Storage Buildings

96 Leighton Road

Augusta ME
Date: 02/07/2023

Prepared For:

Civil Contractor

Prepared By:

Maine Drilling & Blasting, Inc.
Northeast Division
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Gardiner, ME 04345
Telephone: 207-582-2338

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New Hampshire	603.647.0299
New York	518.632.9170
Pennsylvania	800.422.4927
Vermont	802.479.3341

Table of Contents

General
Maine Drilling & Blasting considers safety as the priority during all phases of blasting operations. We are knowledgeable of and will follow all local, state and federal regulations related to transportation and use of explosives. The project specifications and conditions have been reviewed. Details of procedures for pre-blast surveys, explosives use, blast security, monitoring and documentation are enclosed. Blasting will be in accordance with blasting law for site location of development projects: 38 MRSA paragraph 490-Z(14)(Blasting).

Pre-Blast Surveys / Notifications
Pre-blast surveys will be offered to all property owners within a 500 foot radius of the blast site. Appropriate notices will be given and appointments arranged for those owners who desire a survey. Pre-blast surveys will be conducted by a Company Representative. Results of those surveys will be documented through video or still photographs and appropriate narration or written reports. The property owner will be offered to have their well water tested for quantity and quality of water. These results will be submitted to the Department at the property owner's authorization. Results of the surveys will be kept on file for atleast one year after blasting is complete by Maine Drilling & Blasting.

Property owners within 500 feet of the blast area will be provided a blasting schedule. The blasting schedule shall contain, at a minimum - (1) Name, address, and telephone number of the operator, (2) Identification of the specific areas in which blasting will take place, (3) Dates and time periods when explosives are to be detonated, (4) Methods to be used to control access to the blasting areas, and (5) Type and patterns of audible warning and all-clear signals to be used before and after blasting.

Blast Monitoring
All blasts will be monitored by a representative of Maine Drilling & Blasting, Inc. who has been properly trained in the setup and use of seismic monitoring equipment. At least one seismograph will be in use at all times. Placement of monitoring equipment will be at the nearest structure to the blast site with the instrument's transducer firmly coupled to the ground. Maine Drilling & Blasting, Inc. monitoring equipment will consist of Instantel type seismographs. Details are enclosed. Seismographs meet all requirements outlined in subsection M of 28 MRSA paragraph 490-Z(14). Results of blast monitoring will typically be available before the next blast, usually immediately following a blast. Results can be reviewed and modifications can be made to the blast design for the next blast if necessary.

Sequence of Blasting
All blasting operations will be strictly coordinated with Engineers, and Fire Department. Emphasis will be on the safe and efficient removal of the rock existing on this project without impact to surrounding structures. Blasts will be developed so as to create adequate relief which will minimize ground vibrations and offer the greatest protection possible to the surrounding structures.

Blasting Procedures

1. Blasting may not occur in the period between sundown and sunrise the following day or in the period between 7:00 p.m. and 7:00 a.m., whichever is greater. Blasting will not occur more frequently than 4 times per day. Blasting will not be allowed on Saturday and Sunday. Detonation of misfires may occur outside of these times but must be reported to the department within 5 business days of the misfire detonation.

2. Blasting cannot be conducted at times different from those announced in the blasting schedule except in emergency situations, such as electrical storms or public safety required unscheduled detonation.

3. Warning and all-clear signals of different character that are audible within a range of one-quarter mile from the point of the blast shall be given. All persons within the permit area shall be notified of the meaning of the signals through appropriate instructions and signs posted.

4. Access to blasting area shall be regulated to protect the public from the effects of blasting. Access to the blasting area shall be controlled to prevent unauthorized entry before each blast and until the perimeter's authorized representative has determined that no unusual circumstances exist after the blast. Access to and travel in or through the area can then safely resume.

5. Areas in which charged holes are awaiting firing shall be guarded, barricaded and posted, or flagged against unauthorized entry.

6. All blasts shall be made in the direction of the stress relieved face previously marked out or previously blasted.

7. All stemming shall be minimum as specified using clean, dry 3/8" crushed stone.

8. Blasting mats shall be used as necessary to cover blasts.

9. The Blasting Contractor shall insure that extra safety and judgment is exercised by his blaster to prevent the simultaneous blasting of numerous holes.

10. If a blast is initiated by a detonating cord, the detonating cord will be covered by crushed stone or other suitable cover to reduce noise and other concussion effects.

Blasting Mats

Blasting mats and backfill will be used to control excessive amounts of rock movement when blasting in close proximity to structures. Placement and number of mats are typically determined by the blaster. Mats will be placed so as to protect all people and structures on, or surrounding the blast site and property, the mats will prevent flyrock from entering protected natural resources or natural buffer strips. Rubber tire type blasting mats will be utilized on

this project and will be approximately 12' x 24' in size; Rubber mat @ 12' x 24' 38 lbs/sqft = 10,944 lbs/ea.

Blast Security and Warning Whistles
Each blast will be preceded by a security check of the affected area and then a series of warning whistles. Communications will be made with job site supervisors and local officials as required to ensure the safest possible operation. All personnel in the vicinity closest to the blast area will be warned. The warning whistles will follow the following sequence:

3 Audible Signal Pulses - 5 Minutes to Blast

2 Audible Signal Pulses - 1 Minute to Blast

1 Audible Signal Pulses - All Clear

No blast will be fired until the area has been secured and determined safe. The blast site will be examined by the blaster prior to the all-clear signal to determine that it is safe to resume work.

Explosives
All explosives will be delivered to the job site on a daily basis. Overnight storage will be a licensed secure magazine site. Only the amount of explosives required to perform the day's work will be brought to the site. All explosives will be stored in approved magazines when not in use.

Enclosed are Technical Data and SDS sheets for the explosive products proposed for use on this project. Any one of, or a combination of these products may be in use at any one time on the site.

Blaster Qualifications
All Maine Drilling & Blasting, Inc blasters on this job will be licensed in the State of Maine and have received various amounts of training in the safe use and handling of explosives. Additionally, Maine Drilling & Blasting, Inc. blasters are familiar with all OSHA Regulations, State Regulations, and Federal Regulations regarding construction site safety, including transportation, use, and handling of explosive materials. Weekly safety meetings are to be held on site by the Maine Drilling & Blasting, Inc. job foreman, with a record of that meeting returned to the Maine Drilling & Blasting, Inc. office.

Blasting Personnel
All blasting operations shall be conducted by experienced, trained and competent persons who understand the hazards involved. Persons working with explosive materials shall:

1. Have demonstrated knowledge of, and a willingness to comply with, safety and security requirements.

2. Be capable of using mature judgment in all situations.

3. Be of good physical condition and not addicted to intoxicants, narcotics, or other similar type of drugs.

4. The person(s) responsible for the explosives shall possess current knowledge of the local, State and Federal laws and regulations applicable to his work.

5. The person(s) responsible for the explosives shall have obtained a Certificate of Competency or a license as required by State law.

Licenses and Permits
Maine Drilling & Blasting, Inc. is fully licensed and insured for the transportation, use, and handling of explosives. Evidence of insurance is available. Blasting permits will be applied for as required from the local authorities by the Maine Drilling & Blasting, Inc. Blaster/Foreman when blasting is about to begin.

Blast Vibration & Air-Blast
The maximum allowable air-blast at an inhabited building not owned or controlled by the developer may not exceed 129 decibels peak when measured by an instrument having a flat response (+ or - 3 decibels) over the range of 5 to 200 hertz. Additionally, sound from blasting may not exceed the following limits at any inhabited building not owned or controlled by the developer.

- Blast 1 per day: Less than 129 decibel
- Blasts 2 per day: Less than 126 decibel
- Blasts 3 per day: Less than 124 decibel
- Blasts 4 per day: Less than 123 decibel

The maximum allowable air-blast at an uninhabited building not owned or controlled by the developer may not exceed 140 decibels peak when measured by an instrument having a flat response (+ or - 3 decibels) over a range of 5 to 200 hertz.

Blast vibration will be monitored at the blast site, typically at the structure(s) closet to the blast site. Vibration limits will closely follow limits described in the project specifications and the State Regulations. Blast designs will be modified as required to stay within the guidelines and meet project schedules as well. Blasting operations will be modified accordingly when approaching buildings and utilities. Enclosed are preliminary vibration calculations based on known distances to the structures of concern and anticipated initial blast designs.

Ground Vibration peak particle velocity limits shall not exceed:
Refer to Appendix B, Figure B-1, U.S. Bureau of Mines RI 8507.
In addition, the maximum peak particle velocity at inhabitable structures not owned or controlled by the developer will not exceed the levels established below:

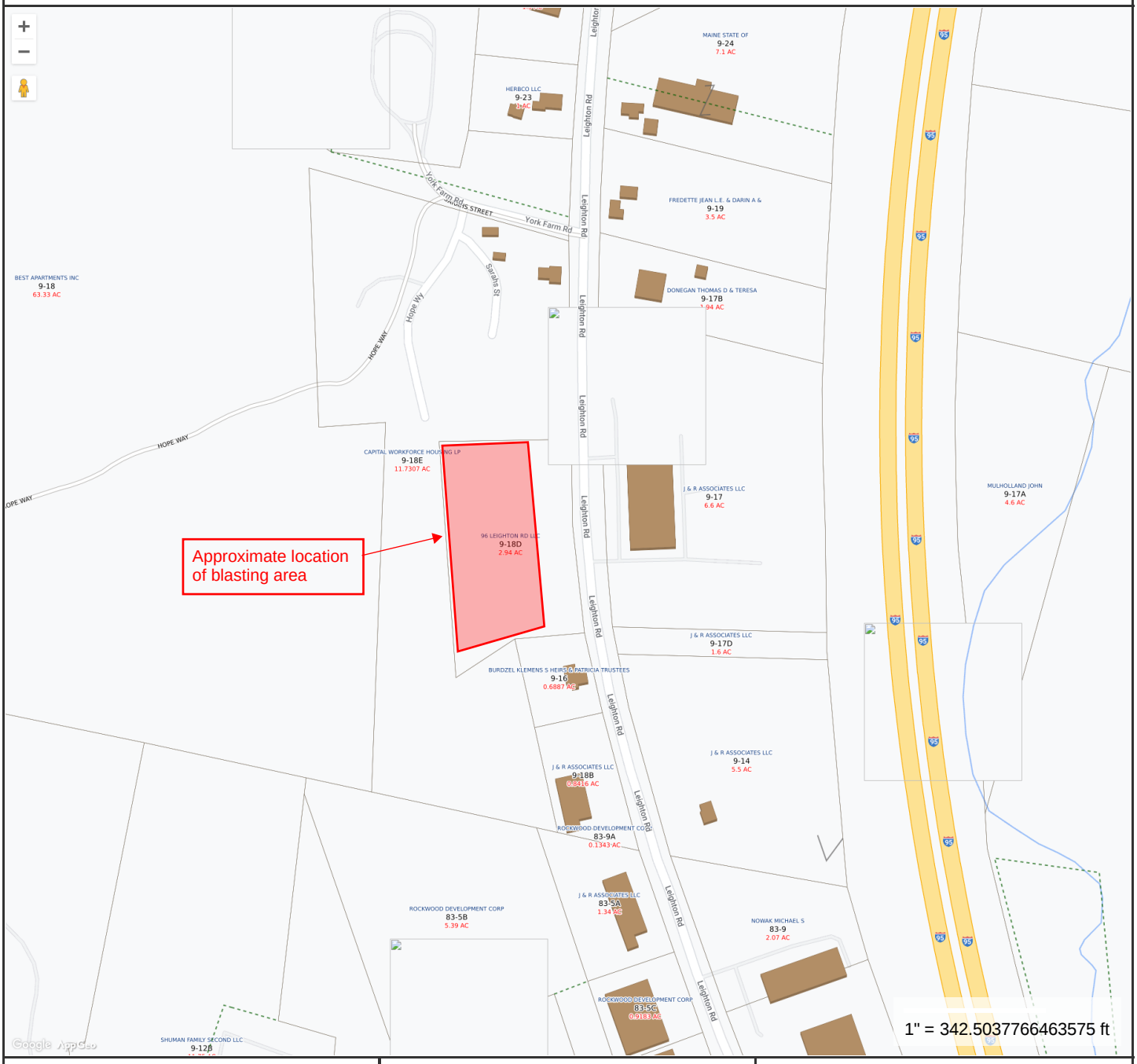
Distance from the Blast (ft.)	Max PPV
0 to 300 feet	1.25 in/sec
301 to 500 feet	0.94 in/sec
501 to 5000 feet	0.75 in/sec
Greater than 5000 feet	0.54 in/sec

Blast Reports

Enclosed is a sample of a Maine Drilling & Blasting, Inc last Report. This report will be filled out for each blast and copies supplied as needed. The reports will be kept for at least one year and will be available for inspection. The Maine DEP will be notified within 48 hours of any blast which exceeds the standards of 38 MRSA paragraph 490 Z-(14), the information in subsection N will be provided with the notification.

Typical Blast Design

Enclosed is what would be considered typical blast designs for this project. Hole sizes, depths, spacing and loading information is provided. These designs are to be considered a good starting point. Modifications are usually made, if necessary, following the first blast to meet control and seismic considerations.



MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Augusta, ME makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 1/17/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Preblast Survey
Drawing

Eric James Storage Buildings

Leighton Rd, Augusta ME

DRAWN:	NB
DATE:	2/2/23
SCALE:	1" = 80'

MD&B ENGINEERING SERVICES

Sample Blast Report

Blast Report

Job#		Cust. PO#	N/A
Date		Cust. Supt. Name	
Customer Name		Pick Tkts#	
Job Address		N/A	N/A N/A
		N/A	N/A N/A

State _____ Permit No. _____ Identify Hazards

Pre Shift Insp.Time (24hrs) : _____

Post Shift Insp.Time (24hrs): _____

Blaster : _____ Precautions Taken:

License #: _____ See JHA and Site Security

Signature:

Weather Comments:

No. of Crew Members _____

Crew Members Names :

			N/A
	A	N/A	N/A
N/A	N/A	N/A	N/A

Seismograph Monitoring Plan (Not to Scale):

Shot # _____ Shot Time (24hrs) _____ Shot VideoTaped:

Weather

Notes:

Weather Conditions: _____

Temp (°F): _____

Wind Direction: _____

Wind Spd: _____ MPH

Preblast

Blast Direction: _____ Max Holes/Delay: _____ Predicted K Factor: _____

Blast Location: _____ Scale Dist.: _____

Location of Structure: _____ Max Weight/Delay: _____ Lbs Predicted PPV: _____

Dist. to Closest (Feet) Structure _____ Railroad/Highway _____ Overhead Util N/A Underground Util N/A

Pay Quantities

Fire Detail # of Hrs: N/A

Pay Cubic Volume

N/A N/A N/A

N/A N/A N/A

Pay Calculations Notes

Shot Info

Configuration

Total Drill Depth(Ft)		Total SqFt		Powder Factor		Total Product Weight (Lbs) :			
Total Tons	N/A	Total Yards				Avg Weight / Hole (Lbs):			

Cal Method Pattern

Holes _____ Cover Used /No N/A

	AVG		Min	Max						
Drill Depth					Stone Weight		Top Stemming		Min	Max
Burden(Feet)		Feet			Type of Terrian		Charges/Hole		Min	Max
Spacing (Feet)		Feet			Type of Rock		Deck Stemming		Min	Max
Hole Diameter					Stemming Type		Charge Wgt/Deck		Min	Max
OverBurden (Ft)					Height of Face		Depth of Water		Min	Max

Control Row Taped _____ Angled Holes /Face Bermed _____ Laser/BoreTracking _____

Total Pounds _____

Type Of Initiation: Non-Electric

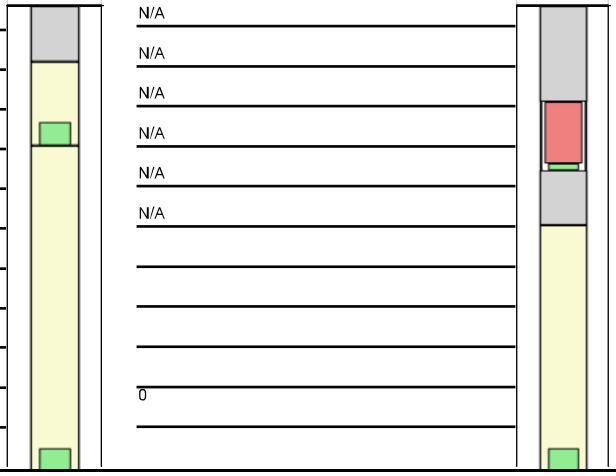
Product #	Desc	Qty	Wgt	
				Lbs
				Lbs
	BA BULK Totals:			Lbs
Product #	Desc	Qty	Wgt	
				Lbs
				Lbs
	BAPACKAGED Totals:			Lbs
Product #	Desc	Qty	Wgt	
				Lbs
				Lbs
	BOOSTERS Totals:		Lbs	

Product #	Desc	Qty	Len
	DETS DHOLE Totals:		
Product #	Desc	Qty	Len
	LINES Totals:		
Product #	Desc	Qty	Len
	SURF DELAY Totals:		

Please See Attached for Seismograph Report

Descripton: Production	
Elevation	**Feet**
Brench (ft)	N/A
Floor (ft)	N/A
Overburden (ft)	
Sub Drilling(ft)	
Total Depth (ft)	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	

Descripton: Decked	
Elevation	**Feet**
Brench (ft)	N/A
Floor (ft)	N/A
Overburden (ft)	
Sub Drilling(ft)	
Total Depth (ft)	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	
0	



Seismograhs

Operator Name	Location of Seis	Seis #	Monitor Log Status	Actual PPV	Actual PPV Freq,	Actual db	Actual Dist. (ft)	Actual K Factor

Please See Attached for Seismograph Report

Typical Blast Design and Timing Diagrams

Loaded Hole-Blast Design for:

Maine Drilling & Blasting

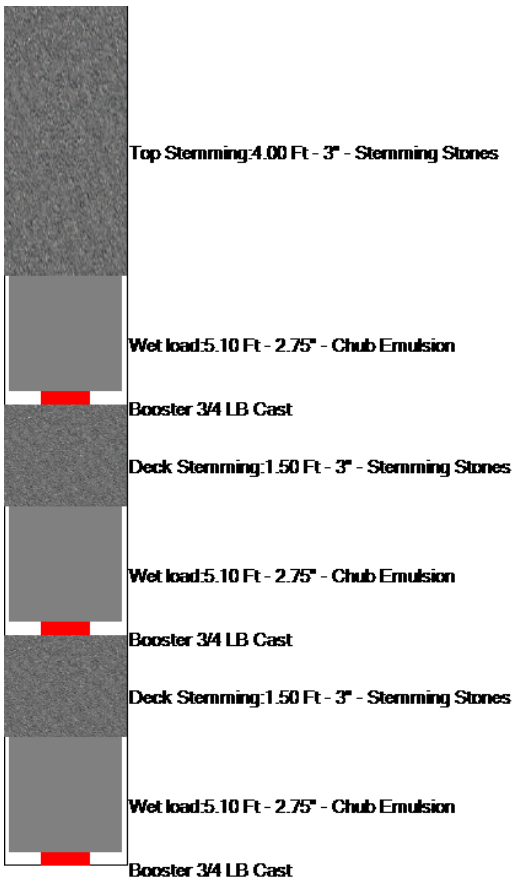
Job Eric James Storage Building
Owner/Site
Location: Augusta, ME **Division:** Northeast
Customer
Author nburch On:2/7/2023 Updated By nandrews On: 2/7/2023
Blast Plan Description: 50 - 100' <20 cut

2/7/2023 3:03 PM

APENDIX A. - Blast Design Plan:

Est. Number Of Holes:	*20*
Hole Depth:	*12.10 Ft*
Hole Diameter:	*3 in*
Burden:	*5.00 Ft*
Spacing:	*5.00 Ft*
Holes per Delay:	*1*
Pounds Per Delay:	*5.38 Lbs*
Pounds Per Hole:	*16.13 Lbs*
Total est. Pounds:	*322.60 Lbs*
Powder Factor:	*1.44 Lbs/Cy*
Decks:	*2*

Loaded Hole **Depth - Diameter - Product**



Blast Plan Notes:

Vibration Prediction (formula based on Dupont Handbook)

Site Factor (k) :	*160*	*Ground Constant based on Site/Rock Conidtions*
Distance Ft (d)	*50*	*Distance to Structure*
Lbs per Delay (w)	*5.38*	*Lbs explosives per 8 milisecond delay*
Scaled Distance (sd)	*21.56*	*(sd = d/ square root of w)*
Estimated PPV	*1.18*	*(ppv = k * sd ^ -1.6)*

Typical for Production work consistent with holes 12.1 Ft deep at 50 from a structure utilizing 3' In diameter at a 5 Ft by 5 Ft pattern.

Plan View/Timing Design (please see attached timing diagram)

Loaded Hole-Blast Design for:

Maine Drilling & Blasting

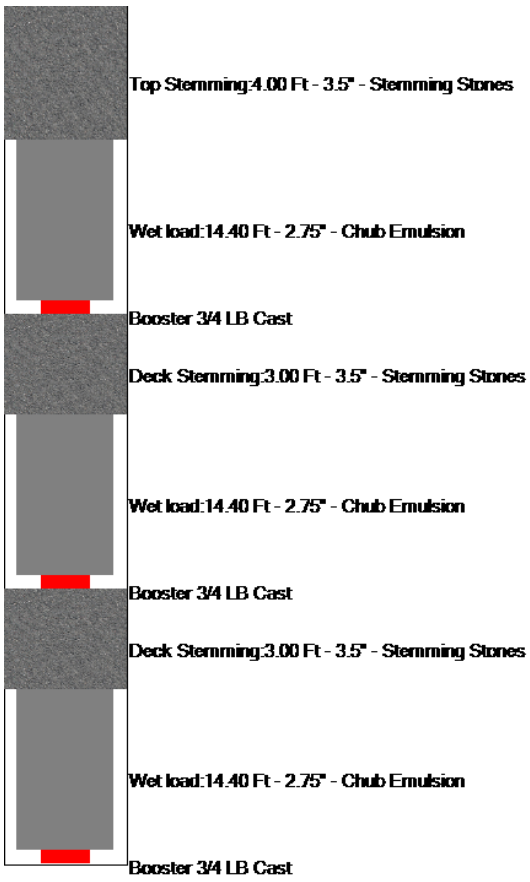
Job Eric James Storage Building
Owner/Site
Location: Augusta, ME **Division:** Northeast
Customer
Author nburch On:2/7/2023 Updated By nandrews On: 2/7/2023
Blast Plan Description: 100' 20+ cut

2/7/2023 3:04 PM

APENDIX A. - Blast Design Plan:

Est. Number Of Holes:	*20*
Hole Depth:	*24.40 Ft*
Hole Diameter:	*3.5 in*
Burden:	*6.00 Ft*
Spacing:	*6.00 Ft*
Holes per Delay:	*1*
Pounds Per Delay:	*15.18 Lbs*
Pounds Per Hole:	*45.55 Lbs*
Total est. Pounds:	*911.00 Lbs*
Powder Factor:	*1.40 Lbs/Cy*
Decks:	*2*

Loaded Hole Depth - Diameter - Product



Blast Plan Notes:

Vibration Prediction (formula based on Dupont Handbook)

Site Factor (k) :	*160*	*Ground Constant based on Site/Rock Conidtions*
Distance Ft (d)	*100*	*Distance to Structure*
Lbs per Delay (w)	*15.18*	*Lbs explosives per 8 milisecond delay*
Scaled Distance (sd)	*25.66*	*(sd = d/ square root of w)*
Estimated PPV	*0.89*	*(ppv = k * sd ^ -1.6)*

Typical for Production work consistent with holes 24.4 Ft deep at 100 from a structure utilizing 3.5' In diameter at a 6 Ft by 6 Ft pattern.

Plan View/Timing Design (please see attached timing diagram)

Maine Drilling & Blasting

Timing Diagram

Date:		**Blaster:**	**Blast Plan**		
Job #:		**License:**			
Customer Name :		**Job Address:**		**State:**	**Maine**
	Shot Number	**Blast Plan**			

Note- Typical timing design. Adjustments will be made pursuant to previous results.
*All numbers are in milliseconds (ms)

0	25	50	75	100	125	150
42	67	92	117	142	167	192
84	109	134	159	184	209	234

Flyrock & Misfire Prevention Plans

Fly Rock Prevention Guidelines

Planning

1. It must be clearly established who the (BIC) is and then clearly communicated to the entire crew.
2. The BIC must clearly communicate what the responsibilities are for each crew member.
3. BIC must understand the abilities of the crew. Trainees must be trained and supervised on all job functions, (assign a trainer).
4. Through the use of the Job Hazard Analysis the crew must become familiar with the blast environment and clearly identify all hazards on and around the job site.
5. The BIC must communicate with the drill operators and other blasters with experience to fully understand the geology on site.
6. The blast design must take into consideration all the relevant parameters, blast geometry, hazards, type of products, timing and type and amount of cover in use.
7. All pre-blast calculations must be done prior to the blast and adjusted should conditions change on the site or drilling conditions dictate a modification of the plan. Powder factor should be determined prior to loading the first hole.
8. Each blast should be designed according to the direction of least danger.
9. Start each project with a conservatively designed test blast. that will not only provide information on the geology but will provide relief for the next shot.
10. When location or conditions on the job site change consider your next blast as a test blast. Document your blast plan and have it reaffirmed.
11. Request hold harmless on shots that may cause damage or takes unnecessary risks.

Drilling

12. Carefully monitor and record hole depths, amount of overburden, and any drill hole anomalies with light colored crayons on the cones or another effective method (Hole Sheets).
13. Use flashlights attached to tapes to determine straightness of holes. If deviation is even slightly suspected, have holes bore tracked.
14. Arrange for Laser Profiling and Bore Tracking for high wall faces with exposures to property.

Loading the Shot

15. Have hole sheets and timing patterns on paper before loading.
16. Profile all faces before loading front row of holes.
17. Have blaster-in-charge load first and second rows of holes.
18. When using pourables (Bulk or ANFO):
    a. Have an appropriate plan to deal with seams, voids, faces, and overloaded holes.
    b. Make the appropriate design modifications for the use of bulk.

c. Keep the increased hazards in mind.

19. Take the time necessary to work safely and do not take shortcuts, or unnecessary risks. (DO NOT RUSH!)
20. Know the exact amount of burden on the face and load and cover accordingly, if face is bermed and you're uncertain of face location, excavate to find the face and then reberm.
21. Utilize berms for faces as appropriate.
22. If questioning the necessity to or the amount of cover, add cover.
23. Know the exact amount of overburden over the rock and load and cover accordingly.
24. Use offsets properly.
25. Train the blast crew on proper stemming techniques, what stemming anomalies may look like, why, and how to report them.
26. Monitor the stemming to make certain that all holes are properly stemmed.
27. Use only appropriate crushed stone and non-sparking stemming rods to compact the stone in each hole.
28. Pay attention when using bulk as it can coat the sides of the hole reducing the effectiveness of the stemming.
29. BIC must walk the shot twice and check power, double-up on power and down hole caps when necessary (critical shots).
30. Ensure 100% safe detonation! Misfires can be a source for flyrock. Follow all Misfire Prevention Guidelines!
31. If there is a remote possibility of fly rock from a blast, take the necessary additional precautions.
32. Never make assumptions. If unfamiliar with the situation; figure it out, then get another opinion to confirm your decision.
33. Always communicate with supervisors when safety issues are compromised.

Site Security

34. Secure loading area before, during, and after loading.
35. Have a thorough, written Blast Zone Security Plan:
    a. Design an over cautious plan.
    b. Communicate the plan with our crew, the Contractor and his crew.
    c. Have all blast guards use hand-held radios on the same frequency or another acceptable means of communication.
36. Secure the blast zone by removing people from the blast area (especially keeping them away from the face of the blast) and have them stay at an overly safe distance behind the blast and put them under cover.
37. Blaster must have proper cover.
38. Execute the Blast Zone Security plan to the "T".

Prevention of Misfires

4/18/15

General Guidelines

Commit to preventing misfires
Teach the right procedures for a "Clinical Hook Up"
Fix it, don't walk by a mess

Shot Design Nonelectric

1. Ensure shot design allows for complete full activated system timing or in cases of larger shots appropriate advancement of the initiation sequence.
2. Document timing before loading the shot
3. Ensure that the shock tube will be the adequate length

Shot Design Electronic

4. A "road map" of the shot MUST be committed to paper.
5. All hole locations and timing MUST be part of the road map.
6. Any problems, anomalies or deviations from the original plan MUST be documented.
7. Ensure all equipment is functional and fully charged prior to the start of the shot.
8. Verify the design matches EXACTLY to what is "on the ground", on the road map and what shows in the equipment. Account for ALL detonators.
9. Follow all established protocols for use of electronic detonators in all applications, particularly in decking situations.
10. When using mats test the shot after each mat is set.

Loading

11. Eliminate ALL distractions
12. Do not compromise the integrity of the shock tube or wires
13. Use caution when using a loading pole or stemming rod as they can damage shock tube or wires

14. No not allow your powder knife to swing unless the blade is protected
15. Do not open detonator boxes with a knife
16. Re-prime any hole where you have used a powder retriever
17. Re-prime any hole where separation is suspected

Hook Ups

18. Communicate clearly and effectively with the team each individual's duties for the shot hook-up.
19. Eliminate Distractions by keeping these items off the shot: cell phone, contractor(s), visitor's etc….
20. Clean up the shot before hook-up of: all tools, cones, boxes etc….
21. Sequence the hook-up process:
22. hook-up the complete row before moving to the next row
23. slide all tubes to back of bunch block
24. Add all timing and hook up in order of initiation (again - slide all tubes to back of bunch block).
25. All shots will be taped to secure connection and provide a neat "clinical" hook up (tape is to be applied to the connection portion of the bunch block).
26. A competent person designated by the BIC must walk the shot (if no other person on the shot is deemed competent, BIC walks the shot a minimum of twice).
27. Regardless of crew size, BIC must walk his shot for final check.
28. GET OFF THE SHOT! Once shot is ready to fire, nobody else is to walk on the shot until shot is fired. (NO EXCEPTIONS)
29. Any changes in the process will need to be communicated to and agreed upon by either Ted or Todd.

Matting

30. Design the shot with the excavators reach in mind
31. Matting shall only be performed under the direction of the Blaster-In-Charge, or their competent designee
32. Ensure that the excavator on the project is sufficient in size to handle the mats in an efficient manner
33. Communicate the matting procedure clearly with the excavator operator; discuss hand signals also.
34. Clean mats of loose debris
35. Do not drag mats over a shot

IME Blasting Best Practices

INSTITUTE OF MAKERS OF EXPLOSIVES

Blasting; Best Practices

The potential to impact surface or groundwater with the substances used in commercial explosives can be controlled through the implementation of certain measures. Implementing such measures as part of a standard operating procedure will eliminate or minimize the potential for these substances to dissolve in or become associated with water. The specific measures included can be grouped into the following four (4) basic categories:

1. Education/Training of Explosive Users
2. Selection of Appropriate Explosives for the Job and Conditions
3. Explosives Loading and Handling
4. Attention to Technical Matters

1. Education/Training of Explosive Users

Both the owners/operators of the location where explosives are being used and the personnel working with commercial explosives should be well informed of all applicable regulations as well as any potential consequences associated with the products' exposure to water. The federal Clean Water Act, or the equivalent state statute, regulates the release of substances, in particular those that can cause an undue risk to human health or the environment. In addition, the Resource Conservation and Recovery Act, governs the disposal of hazardous wastes.

2. Selection of Appropriate Explosive for the Job and Conditions

Selecting the proper explosive for the particular job is critical to the prevention of surface or groundwater impact.

- ANFO (ammonium nitrate - fuel oil) is not water-resistant and should be avoided if contact with water is likely.

- Various types of commercial explosives are available to withstand exposure to water. Water-resistant explosives include the cartridge forms of gelatinous nitroglycerin, watergels and emulsions and the bulk forms of emulsions which are: 1) Site Mixed Emulsion (ammonium nitrate - fuel oil - emulsifier) is a water-resistant explosive, semi-solid. This is manufactured on site and detonated while still warm assuring complete detonation. 2) Repump Emulsion (ammonium nitrate - fuel oil - emulsifier) is a water-resistant explosive, semi solid, manufactured off site, transported and pumped into the borehole as needed.

3. Explosives Loading and Handling

- All excess product in augers or hoses is to be recovered and used either in the next blasthole or recycled in the mixer/holding tank.

- Explosive spillage around the blasthole collar is to be controlled and any such spillage should be placed into the blasthole before stemming

- Water contacting explosives during cleanup is to be contained and managed in accordance with applicable regulations

- Minimize the amount of time that explosives are exposed to wet conditions within the blasthole. The blast should be initiated as near the time the loading is completed as safety and operational procedures allow.

- Avoid having explosives exposed to precipitation.

- To assure complete detonation of explosives placed into the ground, a sufficient number of boosters must be used.

4. Attention to Technical Matters

- The actual physical conditions into which explosives are being placed must be taken into account.

- Personnel responsible for loading explosives into the boreholes should be in continuous communication with the drillers of those boreholes or supplied with adequate drill logs, so that any knowledge regarding fractures, crevices or cavities is obtained.

- Where Bulk ANFO or Emulsion is used in fractured, creviced or cavitied boreholes, plastic borehole sleeves and/or positioned inert stemming decks will be used to ensure total detonation of the explosives and avoidance of excessive charges.

- Choosing and placing the correct drilling patterns that results in the optimal use of explosives with all the explosives undergoing complete detonation.

- Quality assurance/quality control measures to maintain drilling accuracy that prevents the detonation in one blasthole from impacting the proper detonation in a nearby blasthole.

- Selecting the appropriate drilling equipment so that adequate borehole quality is maintained.

- Where appropriate to ensure complete detonation, two (2) primers will be used in each blasthole; one near the top and one near the bottom of the explosive column.

- Correct selection of delay timing for each blasthole to ensure detonation of the entire pattern, and the prevention of cut-off blastholes.

USBM Appendix B Alternative Blasting Level Criteria

APPENDIX B.-ALTERNATIVE BLASTING LEVEL CRITERIA

Safe blasting vibration criteria were developed for residential structures, having two frequency ranges and a sharp discontinuity at 40 Hz (table 13). There are blasts that represent an intermediate frequency case, being higher that the structure resonance (4 to 12 Hz) and lower that 40 Hz. The criteria of table 13 apply equally to a 35-Hz and a 10-Hz ground vibration, although the responses and damage potentials are very much different.

Using both the measured structure amplifications (fig. 39) and damage summaries (figs. 52 and 54), a smoother set of criteria was developed. These criteria have more severe measuring requirements, involving both displacement and velocity (fig. B-1).

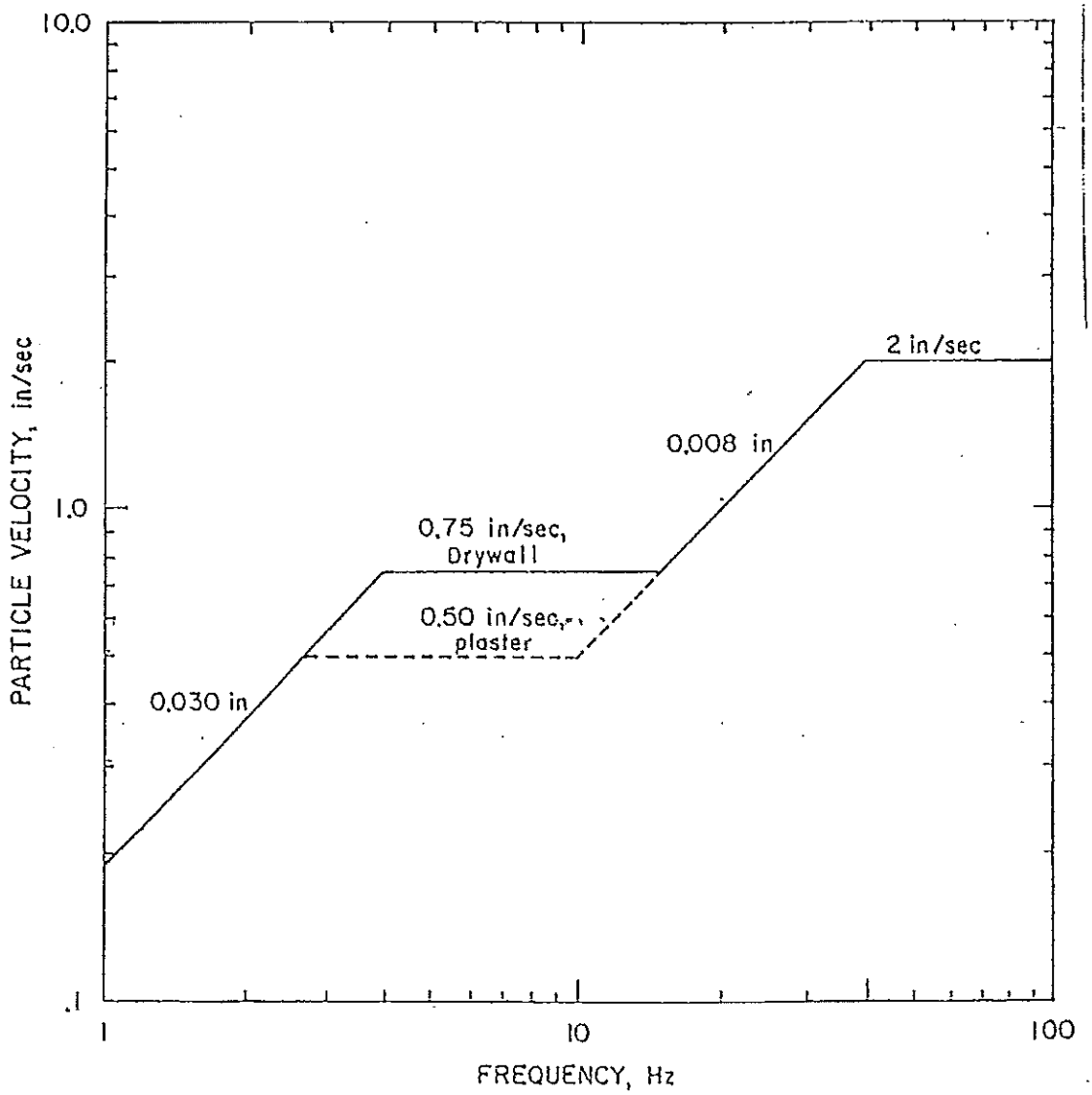


Figure B–1.—Safe levels of blasting vibration for houses using a combination of velocity and displacement.

Seismograph Specifications

White Industrial Seismology, Inc

Mini-Seis III Pro™

The Mini-Seis III Pro is the ultimate vibration monitor. It is suitable for geotechnical, environmental, blast monitoring and more. It features sampling rates of up to 16K over 4 or 8 channels. There is also a 128K single channel sample rate. The unit has a 16 bit dynamic range and is very low power.

Recording modes include waveform, histogram, histogram/waveform and manual. The waveform record duration can be set from 1 to 120 seconds at all sample rates. The histogram period can be set at 1, 10, 20, 30, 40, 50, 60 or 900 seconds.

Data can be downloaded to a computer or thumb drive using high speed USB. Remote access by RS232 with baud rates up to 460800 is supported. The unit has over 3.5 GB of memory and can store up to 4096 waveform and histogram records.

The user interface is simple and easy to navigate. Soft keys provide additional options depending on the screen being viewed. Optional GPS is available to store location coordinates and provide highly accurate clock syncing.

For advanced monitoring the instrument supports the use of non-standard sensors. White can provide a hardware interface for accelerometers, strain gauges, hydrophones and nearly any other AC or DC coupled sensor.

Multiple units can be connected together in a master-slave arrangement where the master unit triggers all of the slave units simultaneously. This feature provides a common time base useful for determining propagation velocity, structure phase response and more.

Specifications

User Manual

Industrial Seismology, Inc.

Mini-Seis III Pro Specifications

General

Channels	Standard - three seismic channels and one acoustic channel. Optional – three additional seismic channels and one additional acoustic channel (8 channel model). Support is available for non-standard sensors.
Seismic	
Range	Standard 260 mm/s (10.24 in/s). Other ranges may be customized at the factory.
Resolution	0.008 mm/s (0.0003 in/s) depending on the range.
Frequency Range (ISEE)	2 to 250 Hz at 1024 sample rate as per ISEE Seismograph Performance Specifications for Blasting Seismographs 2017 Edition. The upper frequency limit is 1/4 the sample rate.
Frequency Range (DIN)	From 1 to 315 Hz.
Accuracy (ISEE)	Conforms with ISEE Performance Specifications for Blasting Seismographs 2017 Edition.
Accuracy (DIN)	DIN 45669-1 Standard.
Transducer Density	Approximately 2.01 g/cc (125 lb/ft^3)
Acoustic	
Weighting	Linear overpressure.
Range	0.0156 Pa (0.000156 Mb) depending on range.
Frequency Range	2 to 250 Hz at 1024 sample rate as per ISEE Seismograph Performance Specifications for Blasting Seismographs 2017 Edition. The upper frequency limit is 1/4 the sample rate.
Linear Accuracy	Conforms with ISEE Performance Specifications for Blasting Seismographs 2017 Edition.
Timer	Allows an instrument to be active only during selected times on a daily basis.
Communication	High speed USB or serial.
Storage Capacity	Up to 4096 waveform and histogram records of any duration.
External Data Storage	Write to USB thumb drive.
System Log	The system log tracks on/off times, changes to setup parameters and system operation.
Operating Modes	Waveform, histogram, histogram/waveform and manual.
Data Reporting	Waveform and histogram events can be reported without needing to deactivate the current operating mode.
Data Retrieval	Data can be downloaded without requiring deactivation of the current operating mode.
GPS	Optional integrated GPS stores location information in the record summary

Waveform Modes

Waveform	Standard mode used for blast monitoring and discrete transient event monitoring.
Manual	Trigger from the keypad or an external switch.
Simultaneous Triggering	Using a combination of manual and triggered modes, multiple units can be connected in serial for simultaneous triggering.
Multi-Level Triggering	Three trigger levels allow for the use of warning lights and sounds.
Sample Rate	1024, 2048, 4096, 8192, 16384 samples per second per channel over 8 channels. Also 65536 and 131072 samples per second over 1 channel.
Duration	1 to 120 seconds at all sample rates.
Pre-Trigger	1 second at 1024 sample rate. The pre-trigger time decreases proportional to the sample rate.
Minimum Trigger Level	
Seismic	0.254 mm/s (0.01 in/s) depending on range.
Linear Acoustic	88 dBL depending on range.
Downtime Between Events	None at all sample rates.
Dynamic Sensor Test	With the exception of the single channel and non-standard sensors, a dynamic sensor test is performed at the end of every event in waveform mode.

Web: www.whiteseis.com Email: info@whiteseis.com Phone: 1-417-624-0164

(Specifications Subject to Change)

Industrial Seismology, Inc.

Mini-Seis III Pro Specifications

Histogram Modes

Histogram	Standard mode for recording discrete measurements from continuous and semi-continuous sources.
Histogram/Waveform	A waveform is recorded while the histogram is running when one of the trigger thresholds is met or exceeded.
Sample Rate	1024, 2048 or 4096 samples per second over 8 channels.
Sample Period	1, 10, 20, 30, 40, 50, 60 seconds and 15 minutes.
Data Stored	Channel peaks, their frequencies and optionally the vector sum.
Histogram Interval	The histogram interval determines how long a histogram will run before deactivating and starting a new histogram. From 1 to 12 hours or 0 which starts a new histogram at midnight.

Reporting

General	Reporting requires an approved remote access device capable of port forwarding TCP data. The reporting can be provided by the White Reporting Service™ or handled by the user with the appropriate version of the White AutoReceive™ software.
Waveform Mode	With reporting activated, after a recording, the seismograph will output a string of characters consisting of the unit serial number and other information.
Histogram Mode	With reporting activated, after a histogram is made inactive, the seismograph will output a string of characters consisting of the unit serial number and other information.

Physical

Size	Approximately 15 cm. x 11.5 cm. x 9 cm. (6 in. x 4.5 in. x 3.5 in.).
Weight	Approximately 1.6 Kg. (3.5 lbs.) without accessories.
Battery	Internal 6.0 volt rechargeable.
Display	The high contrast graphics display facilitates the instrument's setup. It also allows the operator to view operating parameters and summary data.
Keypad	The keypad can be used to navigate screens and modify setup data.
Clock	A 24 hour clock maintains the date and time to the second, even if the primary power fails.
Operating Time	With a fully charged battery the unit will operate from 7 to 10 days at 1024 samples per second. Longer times may be obtained using the timer mode or external power from a solar panel or deep cycle battery.
Charging	An internal charging circuit allows charging with the supplied plug-in wall mount charger or available 10 to 15 volt DC supply. Power supplies for international use are available.
Operating Temperature	0 to 130 degrees F (-18 to 54 degrees C).

Web: www.whiteseis.com Email: info@whiteseis.com Phone: 1-417-624-0164

(Specifications Subject to Change)

WoodsCan Electric Air Horn – Audible Device for Blast Notification

WoodsCan Industries Inc

WoodsCan Hornet

Rechargeable Electric Air Horn

The world's most advanced portable signaling device for industrial and commercial safety

I have been using the WoodsCan blasting horn on a daily basis for urban and downtown blasting procedures since it was first introduced. Never would I want to go back to an aerosol device. With the in-truck quick charge, I have never yet been in a position where my signal warning device fails to work. In my line of work this is imperative. Every blaster that I come in contact with either has one or wants one...they work!

Bruce Rowell - Western Grater Contracting, Ltd.

Reliable

- A consistent 120+ decibels of sound
- Reliable even in cold weather
- Improves crew productivity over disposable compressed gas air horns

Cost Effective

- Pays for itself within a few months
- Save hundreds the first year alone
- Save more each year thereafter

Safe

- No frostbite from leaking gas cans
- No more explosion risks in hot weather
- Transportable on an airplane

Go Green

- No more metal cans to dispose of
- No more tetrafluoroethane (potent greenhouse gas) discharged into the atmosphere
- Ozone friendly

WoodsCan Hornet product highlights:

- Cost-effective signaling device
- Extremely reliable – no more leaky gas cans
- Consistent 120 decibels of sound
- High intensity LED light
- Patented design
- Over 500 one-second pulls per charge
- Rechargeable 14 volt lithium-ion battery
- 30 minute charge time
- Easy to operate
- Environmentally friendly with no greenhouse gas discharged
- Six month limited warranty

Each WoodsCan Hornet kit includes:

- WoodsCan Hornet electric air horn
- 14 volt rechargeable lithium-ion battery
- Charger (120 or 230 VAC)
- 12 volt inverter
- Durable carrying case
- (Optional) second lithium-ion battery
- User's manual

Regardless of your application, the WoodsCan Hornet will meet your signaling needs:

- Mining
- Quarrying
- Construction
- Seismic Exploration
- Animal Control
- Special Events
- Many more…

WoodsCan Industries Inc

For more information, contact us at info@woodscan.com or visit: www.woodscan.com

CE

Maine Drilling & Blasting

Blasting Mats Cut Sheet

Blasting mats

Popular Products :

- 8 ft. x 16 ft. (2.43m x 4.87m)
- 10 ft. x 15 ft. (3m x 4.5m)
- 12 ft. x 24 ft. (3.65m x 7.3m)

Custom Made Products

Our equipment enables us to produce blasting mats to your particular specifications in sizes ranging from 4 x 4 ft. (1.2 x 1.2m.) to 16 x 28 ft. (4.87 x 8.53m.). A flexibility that is unique in the industry.

WHY CHOOSE DYNAMAT BLASTING MATS?		
Our Innovative Processes		
The Dynamat Advantage		Our Goals
Automated processes	We have developed automated processes that let us measure the compaction of the blasting mats.	To ensure consistent quality.
Meticulous tire selection	Our manufacturing processes demand it.	
Our Added Value		
The Dynamat Advantage		Our Goals
Blasting mats over 12 feet (3.66 m) wide	We are the **only manufacturer** in North America to make products of such widths.	To match our client's needs.
12 inches (30 cm) between each cable	We have always spaced them this way. **All** our competitors, on the other hand, leave a gap of 14 to 16 inches (35 to 41 cm) between their cables.	To produce safe blasting mats that control flying debris better.
Forged circular rings	We used forged rings, while the competition used welded ones.	To make blasting mats easier to handle.
Two dimensions of rings	We use 10 and 13-inch (25and 33 cm) rings.	To obtain the resistance required for hoisting.
The benefits of traditional blasting mats vs. blasting mats made of truck tires (transport mat)	• greater flexibility and adaptability to the terrain. • maximal absorption of the energy released by dynamiting. • reduced possibilities of a partial blast. • unequalled ease in handling.	To provide a safe product that not only eliminates all risk of flying debris when dynamiting, but also ensures optimal performance.

Superior quality = safety

Our products are subject to rigorous quality control at every step of the manufacturing process. Carefully selected, the recovered tires that make up our blasting mats are tied together with new cables, and that translates into solidity and resistance. All the rubber pieces are perforated in order to minimize tears. This means that clients can use our blasting mats in total safety.

Traceability

In a process that's unique to Dynamat, blasting mats are individually numbered to allow them to be easily traced and identified wherever they are on a project involving dynamiting. Now that's an advantage that's undeniably Dynamat!

Dynamat inc.
100, rue de la Station
Laval, Québec
H7M 3H7

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Fax : 450 662-9668
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Website : http://www.dynamat.qc.ca/

Printed on : July 20th 2016

SDS Sheets

TECHNICAL DATA SHEET

NONEL® LEAD LINE

Nonelectric Shock Tube

Properties

SDS #1124

Net Explosive Content per 100 Spools of 2500 ft 1.105 KG or 2.436 lbs

Length		Spools / Case
meters	feet	
762	2500	2

- Length rounded to nearest one-half meter.
- See case label for exact case weight.

Case Dimensions

51 x 25 x 28 cm 20 x 9 7/8 x 10 7/8 in

Hazardous Shipping Description

- Articles, Explosives, N.O.S. (HMX, Aluminum), 1.4S, UN 0349, PG II

PRODUCT DESCRIPTION

NONEL LEAD LINE is NONEL shock tube spooled at the factory in 763 meter (2,500 foot) lengths for easy application and deployment. NONEL LEAD LINE shock tube is a small diameter, three-layer plastic tube coated on the innermost wall with a reactive explosive compound. When initiated, NONEL shock tube propagates a low energy signal, similar to a dust explosion, at approximately 2000 m/sec (6,500 ft/sec) along the tube's length with minimal disturbance to the outside of the tube. The signal is transmitted from one NONEL shock tube to another through field-assembled splices.

NONEL LEAD LINE provides maximum flexibility to the blaster in choosing a position of safety from which to initiate nonelectric blast rounds in either underground or surface applications. NONEL LEAD LINE is the only NONEL product that can be cut and spliced into a NONEL detonator product to construct a custom length nonelectric starter assembly.

APPLICATION RECOMMENDATIONS

- ALWAYS splice NONEL LEAD LINE to NONEL EZTL™ nonelectric trunkline delay detonators, NONEL EZ DET® nonelectric blast initiation system, NONEL TD or NONEL Starter detonators to make-up the nonelectric starter assembly when using NONEL LEAD LINE as the primary initiator for NONEL blast rounds.
- ALWAYS trim at least 3 m [10 ft] of tubing before inserting into a nonelectric shock tube starting device or whenever dirt and/or moisture may have compromised the open tube ends before making a splice connection.

Product Disclaimer: Please see reverse side.

DYNO® Dyno Nobel

TECHNICAL DATA SHEET

NONEL® LEAD LINE

Nonelectric Shock Tube

TRANSPORTATION, STORAGE AND HANDLING

- NONEL LEAD LINE must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulations.
- For maximum shelf life (3 years), NONEL LEAD LINE must be stored in a cool, dry, well ventilated magazine. Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives.

APPLICATION RECOMMENDATIONS - continued

- ALWAYS replace the plastic tube closure over the open end of any NONEL LEAD LINE that remains on the spool and is intended to be used to make up another nonelectric starter assembly.
- ALWAYS make the final hook-up of the nonelectric starter assembly to the blast round only after all equipment and non-essential personnel are clear of the blast area.
- ALWAYS unspool NONEL LEAD LINE by hand if the starter assembly has been spliced to it and is attached to the blast round.
- ALWAYS keep any NONEL LEAD LINE tube ends sealed and free from dirt and moisture since dirt or moisture in the shock tube may cause a misfire.
- NEVER use NONEL LEAD LINE for in-hole use. NONEL LEAD LINE is for use outside the borehole only.
- NEVER attempt to knot different lengths of shock tube together. Shock tube will not initiate itself through knot connections. It must be spliced.
- NEVER remove the plastic tube closure from the NONEL LEAD LINE shock tube until just before splicing.
- NEVER attach the starter assembly to the blast round until after the LEAD LINE deployment is complete whenever NONEL LEAD LINE is to be unspooled by any method other than by hand,
- NEVER run over NONEL LEAD LINE with equipment. This may damage the shock tube and may cause a misfire.
- ALWAYS replace the NONEL LEAD LINE if it is damaged
- When making a nonelectric starter assembly using NONEL LEAD LINE, ALWAYS remove the plastic tube closure and save for later use. Splice two freshly-cut ends of NONEL shock tube together (one from the NONEL LEAD LINE and the other from the NONEL detonator) by inserting them into opposite ends of the plastic connector sleeve and pushing them toward one another until they are both at least ½ cm (¼ in) in the splice.

ADDITIONAL INFORMATION – Visit **dynonobel.com** for Brochures and Case Studies related to this product.

DYNO® Dyno Nobel

Safety Data Sheet

According to: 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS
Trade Name: Shock Tube

SECTION 1 – IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800 Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
www.dynonobel.com

SDS #: 1124
Date: 07/20/2020
Supersedes: 05/22/2015

1.1 Product Identifier
Trade Name: Shock Tube
Article Number: 1124
Other Product Identifiers:
NONEL® LEAD LINE

1.2 Relevant Identified uses of the Substance or Mixture and uses Advised Against
No further relevant information available.

Application of the Substance / the Mixture
Explosive product.
Commercial blasting applications.

1.3. Emergency Telephone Number

CHEMTREC	**1-800-424-9300**	**(US/Canada)**
	+01 703-527-3887	**(International)**

SECTION 2 – HAZARD(S) IDENTIFICATION

2.1 Classification of the Substance or Mixture
Classification According to Regulation (EC) No 1272/2008
Classifications listed also are applicable to the OSHA GHS Hazard Communication Standard (29CFR1910.1200).


exploding bomb

Expl. 1.4 H204 Fire or projection hazard.
Classification According to Directive 67/548/EEC or Directive 1999/45/EC

R5: Heating may cause an explosion.

Information Concerning Particular Hazards for Human and Environment: Not applicable.
Additional Information: There are no other hazards not otherwise classified that have been identified.
0 percent of the mixture consists of component(s) of unknown toxicity

2.2 Label Elements
Labelling According to Regulation (EC) No 1272/2008
The product is additionally classified and labelled according to the Globally Harmonized System within the United States (GHS).
The product is classified and labelled according to the CLP regulation.
Hazard Pictograms


GHS01

Signal Word	: Warning
Hazard-determining components of labelling	: octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
Hazard Statements	: H204 Fire or projection hazard.
Precautionary Statements	: P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P250 - Do not subject to grinding/shock/friction. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P240 - Ground/bond container and receiving equipment. P373 - DO NOT fight fire when fire reaches explosives. P370+P380 - In case of fire: Evacuate area. P372 - Explosion risk in case of fire. P401 - Store in accordance with local/regional/national/international regulations. P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard Description	
WHMIS-Symbols	: Explosive products are not classified under WHMIS.
NFPA Ratings (scale 0 - 4)	: Not available.
HMIS-Ratings (scale 0 - 4)	: Not available.

HMIS Long Term Health Hazard Substances
None of the ingredients are listed.

2.3 Other Hazards

Results of PBT and vPvB Assessment

PBT	: Not available.
vPvB	: Not available.

Explosive Product Notice: PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Dangerous components:	
CAS: 2691-41-0 EINECS: 220-260-0	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) T R24; Xn R22; E R2
	Expl. 1.1, H201 Acute Tox. 3, H301; Acute Tox. 3, H311
CAS: 7429-90-5 EINECS: 231-072-3 Index number: 013-001-00-6	aluminium powder (pyrophoric) F R15-17
	Pyr. Sol. 1, H250; Water-react. 2, H261

Additional Information: For the listed ingredients, the identity and exact percentages are being withheld as a trade secret. For the wording of the listed risk phrases refer to section 16.

SECTION 4 – FIRST AID MEASURES

4.1 Description of First Aid Measures
General Information: No special measures required.
After Inhalation: Unlikely route of exposure.
Supply fresh air; consult doctor in case of complaints.
After Skin Contact: Generally the product does not irritate the skin.
Wash with soap and water.
If skin irritation is experienced, consult a doctor.
After Eye Contact: Remove contact lenses if worn.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After Swallowing: Unlikely route of exposure.
Do not induce vomiting; call for medical help immediately.
4.2 Most Important Symptoms and Effects, Both Acute and Delayed
Blast injury if mishandled.
Hazards
Danger of blast or crush-type injuries.
4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed
Product may produce physical injury if mishandled. Treatment of these injuries should be based on the blast and compression effects.

SECTION 5 – FIRE-FIGHTING MEASURES

5.1 Extinguishing Media
Suitable Extinguishing Agents: DO NOT FIGHT FIRE WHEN FIRE REACHES EXPLOSIVES.
For Safety Reasons Unsuitable Extinguishing Agents: None.
5.2 Special Hazards Arising from the Substance or Mixture
DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors. It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.
Product may explode if burned in confined space. Individual cartridges may explode. Mass explosion of many cartridges at once is unlikely.
5.3 Advice for Firefighters
Protective Equipment: Wear self-contained respiratory protective device.
Wear fully protective suit.
Additional Information
Eliminate all ignition sources if safe to do so. Flammability Classification: (defined by 29 CFR 1910.1200) Explosive. Can explode under fire conditions. Individual devices will randomly explode. Will not mass explode if multiple devices are involved. Burning material may produce toxic and irritating vapors. In unusual cases, shrapnel may be thrown from exploding devices under containment. See 2008 Emergency response Guidebook for further information.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures
Remove persons from danger area.
Ensure adequate ventilation
Wear protective clothing.
Protect from heat.
Evacuate area.
Isolate area and prevent access.

6.2 Environmental Precautions
No special measures required.
6.3 Methods and Material for Containment and Cleaning Up
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose unusable material as waste according to item 13.
6.4 Reference to Other Sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7 – HANDLING AND STORAGE

7.1 Precautions for Safe Handling
Handle with care. Avoid jolting, friction and impact.
Use only in well ventilated areas.
Do not subject to grinding/shock/friction.
Information About Fire - and Explosion Protection: Protect from heat. Emergency cooling must be available in case of nearby fire.
7.2 Conditions for Safe Storage, Including Any Incompatibilities Storage:
Requirements to be Met by Storerooms and Receptacles: Store in a cool location.
Avoid storage near extreme heat, ignition sources or open flame.
Information About Storage in One Common Storage Facility: Store away from foodstuffs.
Further Information About Storage Conditions: Store in cool, dry conditions in well sealed receptacles.
Keep away from heat.
7.3 Specific End Use(s): No further relevant information available.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional Information About Design of Technical Facilities: No further data; see item 7.

8.1 Control Parameters

Ingredients with Limit Values that Require Monitoring at the Workplace: The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

DNELs: No further relevant information available.
PNECs: No further relevant information available.
Additional Information: The lists valid during the making were used as basis.

8.2 Exposure Controls
Personal Protective Equipment:
General Protective and Hygienic Measures: The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.
Respiratory Protection: Not required under normal conditions of use.
Respiratory protection may be required after product use.
Protection of Hands: Wear gloves for the protection against mechanical hazards according to NIOSH or EN 388.
Material of Gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Penetration Time of Glove Material: The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye Protection:

Safety glasses

Face protection
Body Protection: Protective work clothing
Limitation and Supervision of Exposure into the Environment: No further relevant information available.
Risk Management Measures: Organizational measures should be in place for all activities involving this product.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

General Information		
Appearance		
Form	:	Solid material
Colour	:	According to product specification
Odour	:	Odourless
Odour Threshold	:	Not determined.
pH- Value	:	Not applicable.
Change in Condition		
Melting point/Melting range	:	Not Determined.
Boiling point/Boiling range	:	Undetermined.
Flash Point	:	Not applicable.
Flammability (solid, gaseous)	:	Fire or projection hazard.
Auto/Self-ignition temperature	:	Not determined.
Decomposition temperature	:	Not determined.
Self-igniting	:	Not determined.
Danger of explosion	:	Heating may cause an explosion.
Explosion limits		
Lower	:	Not determined.
Upper	:	Not determined.
Vapour pressure	:	Not applicable.
Density	:	Not determined.
Relative density	:	Not determined.
Vapour density	:	Not applicable.
Evaporation rate	:	Not applicable.
Solubility in / Miscibility with water	:	Variable, dependent upon product composition and packaging.
Partition coefficient (n-octanol/water)	:	Not determined.
Viscosity		
Dynamic	:	Not applicable.
Kinematic	:	Not applicable.
9.2 Other Information	:	No further relevant information available.

SECTION 10 – STABILITY AND REACTIVITY

10.1 Reactivity:

10.2 Chemical Stability:

Thermal Decomposition / Conditions to be Avoided: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

10.3 Possibility of Hazardous Reactions: Danger of explosion.

Toxic fumes may be released if heated above the decomposition point.

10.4 Conditions to Avoid: No further relevant information available.

10.5 Incompatible Materials: No further relevant information available.

10.6 Hazardous Decomposition Products: Possible in traces.

Nitrogen oxides.

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Acute Toxicity:

LD/LC50 Values Relevant for Classification: None.

Sensitisation: No sensitising effects known.

Primary irritant effect:

On the Skin: Not a skin irritant in unused form. Vapors/particles from used product are possibly irritating to skin.

On the Eye: Not an eye irritant in unused form. Vapors/particles from used product are possibly irritating to eyes.

Sensitisation: No sensitising effects known.

Subacute to Chronic Toxicity: No further relevant information available.

Acute Effects (Acute toxicity, Irritation and Corrosivity): Danger of blast or crush-type injuries.

Repeated dose toxicity: No further relevant information available.

SECTION 12 – ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic Toxicity: No further relevant information available.

12.2 Persistence and Degradability: No further relevant information available.

12.3 Bioaccumulative Potential: No further relevant information available.

12.4 Mobility in Soil: No further relevant information available.

Additional Ecological Information

General Notes: Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

12.5 Results of PBT and vPvB Assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Other Adverse Effects: No further relevant information available.

SECTION 13 – DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:
Recommendation: Must not be disposed together with household garbage. Do not allow product to reach sewage system. Damaged materials pose a danger to anyone in the immediate area; consult experts for disposal of damaged products.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.
Uncleaned Packaging:
Recommendation: Disposal must be made according to official regulations.

SECTION 14 – TRANSPORT INFORMATION

14.1 UN-Number
DOT, ADR, IMDG, IATA : UN0349
14.2 UN Proper Shipping Name
DOT : For 10,000 ft spools with Wire Lock Terminations only: Not regulated as an explosive. ARTICLES, EXPLOSIVE, N.O.S. (CONTAINS CYCLOTETRAMETHYLENE TETRANITRAMINE)
ADR : 0349 ARTICLES, EXPLOSIVE, N.O.S. (CONTAINS CYCLOTETRAMETHYLENE TETRANITRAMINE)
IMDG, IATA : ARTICLES, EXPLOSIVE, N.O.S. (CONTAINS CYCLOTETRAMETHYLENE TETRANITRAMINE)
14.3 Transport Hazard Class(es)
DOT
Class : 1.4
Label : 1.4

ADR, IMDG, IATA
Class : 1.4
Label : 1.4S

14.4 Packing Group
DOT, ADR, IMDG, IATA : II
14.5 Environmental Hazards:
Marine Pollutant: : No
14.6 Special Precautions for User: Not applicable.
EMS Number : F-B, S-X
14.7 Transport in Bulk According to Annex II of MARPOL73/78 and the IBC Code: Not applicable.
Transport/Additional information:
ADR
Limited Quantities (LQ) : 0
Excepted Quantities (EQ) : Code: E0
Not permitted as Excepted Quantity
UN "Model Regulation" : UN0349, ARTICLES, EXPLOSIVE, N.O.S., 1.4S, II

SECTION 15 – REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture
United States (USA)

SARA		
Section 355 (Extremely Hazardous Substances)		
None of the ingredients are listed.		
Section 313 (Specific Toxic Chemical Listings)		
None of the ingredients are listed.		
TSCA (Toxic Substances Control Act)		
All ingredients are listed.		
Proposition 65 (California)		
Chemicals known to cause cancer		
None of the ingredients is listed.		
Chemicals known to cause reproductive toxicity for females		
None of the ingredients are listed.		
Chemicals known to cause reproductive toxicity for males		
None of the ingredients are listed.		
Chemicals known to cause developmental toxicity		
None of the ingredients are listed.		
Carcinogenic Categories		
EPA (Environmental Protection Agency)		
2691-41-0	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	D
IARC (International Agency for Research on Cancer)		
None of the ingredients are listed.		
TLV (Threshold Limit Value established by ACGIH)		
7429-90-5	aluminium powder (pyrophoric)	A4
NIOSH-Ca (National Institute for Occupational Safety and Health)		
None of the ingredients are listed.		
Canada **Canadian Domestic Substances List (DSL)**		
All ingredients are listed.		
Canadian Ingredient Disclosure list (limit 0.1%)		
None of the ingredients are listed.		
Canadian Ingredient Disclosure list (limit 1%)		
None of the ingredients are listed.		

Other regulations, limitations and prohibitive regulations
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Substances of very high concern (SVHC) according to REACH, Article 57
None of the ingredients are listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16 – OTHER INFORMATION

Revision Date : 07/20/2020
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Relevant Phrases

- H201 Explosive; mass explosion hazard.
- H250 Catches fire spontaneously if exposed to air.
- H261 In contact with water releases flammable gases.
- H301 Toxic if swallowed.
- H311 Toxic in contact with skin.
- R15 Contact with water liberates extremely flammable gases.
- R17 Spontaneously flammable in air.
- R2 Risk of explosion by shock, friction, fire or other sources of ignition.
- R22 Harmful if swallowed.
- R24 Toxic in contact with skin.

Abbreviations and acronyms:

- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- DOT: US Department of Transportation
- IATA: International Air Transport Association
- GHS: Globally Harmonised System of Classification and Labelling of Chemicals
- ACGIH: American Conference of Governmental Industrial Hygienists
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- NFPA: National Fire Protection Association (USA)
- HMIS: Hazardous Materials Identification System (USA)
- WHMIS: Workplace Hazardous Materials Information System (Canada)
- DNEL: Derived No-Effect Level (REACH)
- PNEC: Predicted No-Effect Concentration (REACH)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- Expl. 1.1: Explosives, Division 1.1
- Expl. 1.4: Explosives, Division 1.4
- Pyr. Sol. 1: Pyorphoric Solids, Hazard Category 1
- Water-react. 2: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 2
- Acute Tox. 3: Acute toxicity, Hazard Category 3

Sources
SDS Prepared by:
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Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

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Dyno Nobel SDS

TECHNICAL DATA SHEET

PACKAGED EXPLOSIVES

BLASTEX ®

Small & Large Diameter Booster Sensitive Emulsion

Properties

SDS #1063

		BLASTEX	BLASTEX PLUS
Density	(g/cc) Avg	1.26	1.26
Energy[a]	(cal/g)	740	800
	(cal/cc)	930	1,010
Relative Weight Strength[a]		0.84	0.91
Relative Bulk Strength[a,b]		1.29	1.40
Velocity[c]	(m/s)	5,000	4,900
	(ft/s)	16,400	16,100
Detonation Pressure[c]	(Kbars)	79	76
Gas Volume[a]	(moles/kg)	44	39
Fume Class		IME1 & NRCan[d]	IME1
Shelf Life Maximum		1 year from date of production	
Maximum Water Depth		45 m (150 ft)	
Water Resistance		Excellent	

[a] All Dyno Nobel Inc. energy and gas volume values are calculated using PRODET™ the computer code developed by Dyno Nobel Inc. for its exclusive use. Other computer codes may give different values.

[b] ANFO = 1.00 @ 0.82 g/cc

[c] Unconfined @ 75 mm (3 in) diameter

[d] Approved by Natural Resources Canada as Fume Class 1 in:
*valeron chub 50 mm (2 in) diameter and greater
*shot bag 125 mm (5 in) diameter and greater

Hazardous Shipping Description

- Explosive, Blasting, Type E, 1.5D, UN 0332 II

PRODUCT DESCRIPTION

BLASTEX is a booster sensitive, water resistant, packaged emulsion explosive designed to satisfy a majority of medium diameter explosive applications for quarry and construction blasting. It is a cost effective alternative to most detonator sensitive, water resistant, packaged emulsion explosives. BLASTEX is available in two grades with increasing energy level for each.

APPLICATION RECOMMENDATIONS

- Package diameter and type affect product density. Use cartridge count to determine actual explosive charge weight.
- Ensure continuous column loading. For column lengths in excess of 6 m (20 ft) or whenever column separation is suspected, multiple priming is recommended.
- Emulsion explosives are susceptible to “dynamic shock” and may detonate at low order or fail completely when applied in very wet conditions, where explosive charges or decks are closely spaced and/or where geological conditions promote this effect. Consult your Dyno Nobel representative for alternate product recommendations when these conditions exist.
- ALWAYS use a cast booster as a primer for BLASTEX to ensure maximum performance.
- ALWAYS use a 340 g (12 oz) or larger cast booster at internal product temperatures higher than -18° C (0° F). At internal product temperatures below -18° C (0° F) and higher than -34° C (-30° F) use a 454 g (16 oz) or larger cast booster.
- NEVER use BLASTEX at internal product temperatures below -34° C (-30° F). At internal product temperatures below -34° C (-30° F), adequate product warm-up time must be allowed after loading into boreholes and before initiation.
- Use with detonating cord is not recommended.

DYNO® Dyno Nobel

TECHNICAL DATA SHEET

BLASTEX ®

Small & Large Diameter Booster Sensitive Emulsion

Properties Cont.

Packaging, Chub

Diameter x Length		Blastex	Blastex Plus	Case Qty	Net Explosive Weight*		Net Explosive Weight / Chub	
mm	in				kg	lbs	kg	lbs
50 x 400	2 x 16	•	•	18	18.0	40	1.00	2.20
57 x 400	2¼ x 16	•	•	14	17.7	39	1.26	2.78
65 x 400	2½ x 16	•	•	12	18.1	40	1.51	3.33
70 x 400	2¾ x 16	•	•	9	17.3	38	1.92	4.23
75 x 400	3 x 16	•	•	8	18.2	40	2.27	5.00
89 x 400	3½ x 16	•	•	6	16.7	37	2.77	6.11

Packaging, Shot Bag

Bag Diameter		Bag Weight		Tote Bag Quantity
mm	in	kg	lbs	
125	5	11.3	25	40

TRANSPORTATION, STORAGE AND HANDLING

- BLASTEX and BLASTEX PLUS must be transported, stored, handled and used in conformity with all applicable federal, state, provincial and local laws and regulations.
- Packaged emulsions have a shelf life of one (1) year when stored at temperatures between -18° C and 38° C (0° F and 100° F). Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case ad the Safety Library Publications of the Institute of Makers of Explosives.

PACKAGING DETAILS

- Package diameter and type affect product density. Use cartridge count to determine actual explosive charge weight.
- All weights are approximate.
- BLASTEX and BLASTEX PLUS are available in a wide variety of sizes. Custom sizes are subject to surcharge and may require longer than usual lead times.
- Check with your Dyno Nobel representative should you have any questions.

*Add two pounds for Gross Case Weight

Tote Bag Dimensions

84 x 84 x 94 cm 33 x 33 x 37 in

Case Dimensions

44 x 35 x 20 cm 17.25 x 13.875 x 7.875 in

ADDITIONAL INFORMATION – Visit dynonobel.com for Brochures and Case Studies related to this product.

DYNO Dyno Nobel

Safety Data Sheet

SECTION 1 – IDENTIFICATION

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800 Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com www.dynonobel.com

SDS #: 1063
Date: 07/20/2020
Supersedes: 10/12/2018

Product Identifier
Product Form: Mixture
Product Name: Packaged Emulsion Explosives

Trade Name(s):
Synonyms:
BLASTEX®
BLASTEX® PLUS
BLASTEX® TX

Other Means of Identification
Product Class: Emulsion Explosives, Packaged

Intended Use of the Product:
Industrial blasting applications

Emergency Telephone Number
FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)
Expl. 1.5 H205

Label Elements
GHS-US Labeling
Hazard Pictograms (GHS-US) :

GHS07

Signal Word (GHS-US) : Danger
Hazard Statements (GHS-US) : H205 – May mass explode in fire
Precautionary Statements (GHS-US) : P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P264 - Wash exposed areas. thoroughly after handling
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P373 - DO NOT fight fire when fire reaches explosives
P370+P380 - In case of fire: Evacuate area
P372 - Explosion risk in case of fire
P401 – Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR part 555.

P501 - Dispose of contents/container according to local, regional, national, and international regulations

Other Hazards

Hazards Not Otherwise Classified (HNOC): Not available
Other Hazards: None

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product identifier	% (w/w)	Ingredient Classification (GHS-US)
Ammonium nitrate	(CAS No) 6484-52-2	65 - 85	Ox. Sol. 3, H272 Eye Irrit. 2A, H319
Sodium nitrate	(CAS No) 7631-99-4	0.1 – 10	Ox. Sol. 3, H272 Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319
Aluminum	(CAS No) 7429-90-5	0.1 - 3	Comb. Dust, H232 Flam. Sol. 1, H228 Water-react. 2, H261
Mineral Oil	(CAS No) 64742-54-7	0 – 2	Asp. Tox. 1, H304
Wax (paraffin)	(CAS No) 8002-72-2	0.0 – 2.2	Not Classified

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).
Full text of H-phrases: see section 16

SECTION 4 - FIRST AID MEASURES

Description of First Aid Measures

This is a packaged product that will not result in exposure to the contents under normal conditions of use. In the event of contact, administer first aid appropriate for symptoms present.

General: Never give anything by mouth to an unconscious person. If exposed or concerned, seek medical advice and attention.

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Remove contaminated clothing. Gently wash with plenty of soap and water followed by rinsing with water for at least 15 minutes. Wash contaminated clothing before reuse.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

Ingestion: Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms and Effects Both Acute and Delayed

General: Avoid ingestion, contact with eyes or skin.

Inhalation: May cause respiratory irritation.

Skin Contact: May cause skin irritation.

Eye Contact: May cause serious eye irritation.

Ingestion: Seek medical attention.

Chronic Symptoms: None expected under normal conditions of use.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

SECTION 5 - FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate

all personnel to a predetermined safe location, no less than 2,500 feet in all directions.
Unsuitable Extinguishing Media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS
Special Hazards Arising From the Substance or Mixture
Fire Hazard: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.
Explosion Hazard: This product is an explosive with mass detonation hazard. Heating may cause an explosion.
Reactivity: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in a large quantity.

Advice for Firefighters
Firefighting Instructions: DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Guard against re-entry.
Protection During Firefighting: See above
Hazardous Combustion Products: Nitrogen Oxides (NO_x), Carbon Monoxide (CO). Ammonia.
Reference to Other Sections: Refer to section 9 for flammability properties.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
General Measures: Avoid all contact with skin, eyes, or clothing. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Eliminate every possible source of ignition.
For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.
For Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Eliminate ignition sources. Ventilate area.

Environmental Precautions
Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up
Methods for Cleaning Up: Protect from all ignition sources. If no fire danger is present, and product is undamaged and/or uncontaminated, pick up or sweep up and repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State, and local spill reporting requirements.
Reference to Other Sections
See heading 8, Exposure Controls and Personal Protection. Concerning disposal elimination after cleaning, see section 13.

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling
This is a packaged product that will not result in exposure to the contents under normal conditions of use.
Additional Hazards When Processed: This product is an explosive and should only be used under the supervision of trained and licensed personnel. Use accepted safe industry practices when handling and using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product.
Conditions for Safe Storage, Including Any Incompatibilities
Technical Measures: Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555.
Storage Conditions: Store in cool, dry, well-ventialated location. Store in compliance with Federal, State and local regulations. Keep away from heat, flame, ignition sources and strong shock. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of

heat. Isolate from incompatibles.
Incompatible Materials: Corrosives (strong acids and strong bases or alkalis)
Specific End Use(s) For industrial blasting applications.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits

Ingredients:	Product identifier:	ACGIH TLV-TWA	OSHA PEL-TWA
Ammonium nitrate	(CAS No) 6484-52-2	None	None
Sodium nitrate	(CAS No) 7631-99-4	None	None
Aluminum	(CAS No) 7429-90-5	10 mg/m^3 (dust)	15 mg/m^3 (total)
Mineral Oil	(CAS No) 64742-54-7	5 mg/m^3 (mist)	5 mg/m^3 (mist)
Wax (paraffin)	(CAS No) 8002-72-2	2-10 mg/m^3 (wax fume)	None

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

Exposure Controls
Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Protective goggles. Protective clothing.
Materials for Protective Clothing: protective clothing.
Hand Protection: Protect against incidental skin contact.
Eye Protection: Chemical goggles or safety glasses.
Skin and Body Protection: Wear suitable protective clothing.
Respiratory Protection: Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.
Environmental Exposure Controls: Do not allow the product to be released into the environment.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	White or pink opaque semi-solid, which will appear gray if product contains aluminum. Typically paper or plastic chub packaging.
Odor	:	Faint petroleum odor
Odor Threshold	:	Not available
pH	:	Not applicable
Evaporation Rate	:	< 1
Melting Point	:	Not applicable
Freezing Point	:	Not applicable
Boiling Point	:	Not applicable
Flash Point	:	Not applicable

Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Ammonium nitrate: 210 °C (410 °F)
Flammability (solid, gas)	:	Not applicable
Lower Flammable Limit	:	Not applicable
Upper Flammable Limit	:	Not applicable
Vapor Pressure	:	Not applicable
Relative Vapor Density at 20 °C	:	Not applicable
Relative Density	:	Not applicable
Density	:	1.20 - 1.30 g/cc
Specific Gravity	:	Not applicable
Solubility	:	Partially soluble in water
Partition coefficient: n-octanol/water	:	Not available
Viscosity	:	Not available
Explosive properties	:	Explosive; mass explosion hazard
Explosion Data – Sensitivity to Mechanical Impact	:	Not sensitive
Explosion Data – Sensitivity to Static Discharge	:	Not sensitive

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in a large quantity.
Chemical Stability: Stable under normal temperature and pressure.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Keep away from heat, flame, ignition sources and strong shock.
Incompatible Materials: Corrosives (strong acids and strong bases or alkalis).
Hazardous Decomposition Products: Nitrogen Oxides (NO_X), Carbon Monoxide (CO), Ammonia

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product
Acute Toxicity: Not classified
LD50 and LC50 Data: Not available
Skin Corrosion/Irritation: Not classified
Serious Eye Damage/Irritation: May cause eye irritation.
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Teratogenicity: Not classified
Carcinogenicity: Not classified
Specific Target Organ Toxicity (Repeated Exposure): Not classified
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified
Aspiration Hazard: Not classified
Symptoms/Injuries After Inhalation: May cause respiratory irritation.
Symptoms/Injuries After Skin Contact: May cause skin irritation.
Symptoms/Injuries After Eye Contact: Causes eye irritation.
Symptoms/Injuries After Ingestion: If ingested, seek medical attention.

Information on Toxicological Effects - Ingredient(s)
LD50 and LC50 Data:

Sodium nitrate (7631-99-4)

LD50 Oral Rat	> 2000 mg/kg
Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Not classified

Sodium nitrate (7631-99-4)	
LC50 Fish 1	2000 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
LC 50 Fish 2	994.4 - 1107 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])

Persistence and Degradability

Sodium nitrate (7631-99-4)	
Persistence and Degradability	**Readily biodegradable in water.**

Bioaccumulative Potential

Sodium nitrate (7631-99-4)	
Bioaccumulative Potential	Not expected to bioaccumulate.

Ammonium nitrate (6484-52-2)	
BCF fish 1	No bioaccumulation expected.

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

Toxicity Not classified

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

Additional Information: None

SECTION 14 - TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E or Agent blasting, Type E

Hazard Class : 1.5D

Identification Number : UN0332

Label Codes : 1.5D

Packing Group : II

ERG Number : 140

14.2 In Accordance with IMDG

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E (AGENT, BLASTING, TYPE E)

Hazard Class : 1.5D

Identification Number : UN0332

Label Codes : 1.5D
EmS-No. (Fire) : F-B
EmS-No. (Spillage) : S-Y

14.3 In Accordance with IATA
Proper Shipping Name : AGENT, BLASTING TYPE E
Identification Number : UN0332
Hazard Class : 1
Label Codes : 1.5D

ERG Code (IATA) : 1L

14.4 In Accordance with TDG
Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E
Packing Group : II
Hazard Class : 1.5D
Identification Number : UN0332
Label Codes : 1.5D

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations

Packaged Emulsion Explosives

Bureau of Alcohol Tobacco & Firearms (BATF)
Department of Transportation (DOT)
Mine Safety & Health Administration (MSHA)

Canadian Regulations

Packaged Emulsions

WHMIS Classification	**Note: Explosives are not regulated under WHMIS. They are subject to the regulations of the Explosives Act of Canada.**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 07/20/2020
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Expl. 1.5	Explosive Category 1.5
H205	May mass explode in fire

Party Responsible for the Preparation of This Document
Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800

Disclaimer

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Dyno Nobel SDS

Maine Drilling & Blasting

1966 Emulsion Blend
Technical Data Sheet

1966 Emulsion Blend is based on the Nelson Brothers PowerNel ®1500 or similar Sensitized Bulk Emulsion. For purposes of this document the PowerNel ®1500 was used to develop the information below:

PowerNel® 1500 Specification

PowerNel 1500 is an ammonium nitrate / hydrocarbon emulsion blasting agent in the form of a water-in-oil emulsion explosive. PowerNel 1500 can be used in packaged or bulk form, and it is often used in combination with low cost ANFO in various proportions to meet individual blasting needs. PowerNel 1500 is sensitized to insure effective performance when used under demanding conditions.

PowerNel® 1500 is manufactured to the following specifications:

PowerNel® 1500

Parameter	Specification
Density *g/cc*	1.25 maximum[1]
lb/gal	10.43 maximum[1]
Absolute Weight Strength *cal/g*	645[2]
Absolute Bulk Strength *cal/cc*	806
Relative Bulk Strength *(% ANFO)*	109
Velocity of Detonation[3] *ft/sec*	19,000 – 20,000
Shelf Life (minimum, matrix only)	1 year

The Sensitized Bulk Emulsion is blended to an approximate 80% Emulsion / 20% Ammonium Nitrate ratio for delivery to the job site. Additional ratios may be blended on site by "Quad" blend trucks and include 70/30 and 50/50 ratios.

BLEND	***Sensitized Emulsion***	***80/20***	***70/30****	***50/50****
DENSITY[4] g/cc	**1.25**	**1.27**	**1.29**	**1.34**
Relative Bulk Strength	**109**	**117**	**123**	**135**
Velocity of Detonation ft/sec	**19,000-20,000[3]**	**19,000[5]**	**18,700[5]**	**16,100[5]**
Water Resistance	**Excellent**	**Excellent**	**Excellent**	**Excellent**
Minimum Diameter**	**3"**	**3 ½"**	**5"**	**6"**
Minimum Booster***	**¾ lb**	**¾ lb**	**1 lb**	**2 lb**

*These blends (70/30 & 50/50) are produced on site from a "Quad" truck.

** Recommended minimum diameters

***Recommended minimum priming requirements

All data provided by Nelson Bros. laboratory:

[1] *At normal ambient temperature (approx 75 F)*
[2] *From TIGERWIN Program Code, version 4*
[3] *Measured velocities in 6.75 inch diameter borehole, 100% emulsion*
[4] *Typical values, may vary with ANFO density*
[5] *Typical, averaged values in 6.75 inch borehole*

Maine Drilling & Blasting

Setting Earth Shattering Standards
Since 1966

Safety Data Sheet

SECTION 1 – IDENTIFICATION

Name, Address, and Telephone of the Responsible Party

Date: 03/16/2018

Supersedes: 08/24/2015 & 09/2005

Maine Drilling & Blasting
88 Gold Ledge Ave,
Auburn, NH 03032

Phone: (207) 582-2338 Toll Free: (800) 370-2338

Product Identifier
Product Form: Mixture
Product Name: 1966 Emulsion Blend

Other Means of Identification
Product Class: Emulsion
Trade Names:
1966 Emulsion Blend

Intended Use of the Product
Industrial applications

Emergency Telephone Numbers: DAY: 603-647-0299
FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture
Classification (GHS-US)

Expl. 1.5	H205
Eye Irrit. 2A	H319
Carc. 2	H351
STOT RE 2	H373

Label Elements
GHS-US Labeling
Hazard Pictograms (GHS-US) :

GHS07 GHS08

Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) :
H205 - May mass explode in fire.
H319 - Causes serious eye irritation.
H351 – Contains materials suspected of causing cancer.
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements (GHS-US) :
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking.
P220 - Keep/Store away from combustible materials.
P221 - Take any precaution to avoid mixing with combustible materials.

P240 - Ground/bond container and receiving equipment. Consult manufacturer for detailed guidance on appropriate grounding/bonding.
P260 - Do not breathe dust, mist, vapors.
P264 - Wash hands, forearms and exposed areas thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear eye protection, protective clothing, protective gloves.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P314 - Get medical advice/attention if you feel unwell.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P370+P378 - In case of fire: Do NOT attempt to fight fire.
P370+P380 - In case of fire: Evacuate area.
P372 - Explosion risk in case of fire.
P373 - DO NOT fight fire when fire reaches explosives.
P401 - Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555..
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product identifier	% (w/w)	Ingredient Classification (GHS-US)
Ammonium nitrate	(CAS No) 6484-52-2	65 - 90	Ox. Sol. 3, H272 Eye Irrit. 2A, H319
Fuel oil / mineral oil blend	(CAS No) 68476-30-2	3 - 9	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 3, H402 Aquatic Chronic 2, H411
Polymeric Surfactant	NA	0.5 – 2	Not available

More than one of the ranges of concentration prescribed by Controlled Products Regulations has been used where necessary, due to varying composition.
Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

SECTION 4 - FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Remove contaminated clothing and wash before reuse. Gently wash with plenty of soap and water.

Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

Ingestion: Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTER or doctor/physician.
Most Important Symptoms and Effects Both Acute and Delayed
General: May cause serious eye irritation. Contains material suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure.
Inhalation: May cause respiratory irritation.
Skin Contact: May cause skin irritation.
Eye Contact: May cause serious eye irritation.
Ingestion: Ingestion is likely to be harmful or have adverse effects.
Chronic Symptoms: Contains material suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure.
Indication of Any Immediate Medical Attention and Special Treatment Needed
If exposed or concerned, get medical advice and attention. If ingested, causes methemoglobenemia – emergency response should treat appropriately, such as by intravenous administration of methylene blue.

SECTION 5 - FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES.
Unsuitable Extinguishing Media: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.
Special Hazards Arising From the Substance or Mixture
Fire Hazard: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.
Explosion Hazard: Explosion risk in case of fire. This product is an explosive with mass detonation hazard. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.
Reactivity: Stable under normal conditions. May explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in large quantities.
Advice for Firefighters
Firefighting Instructions: DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors.
Hazardous Combustion Products: Carbon Monoxide (CO) and Nitrogen Oxides (NOx)
Reference to Other Sections: Refer to section 9 for flammability properties.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing (vapor, mist, dust).
For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.
For Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Stop release if safe to do so. Eliminate ignition sources. Ventilate area.

Environmental Precautions
Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up
For Containment: Contain any spills with dikes to prevent migration and entry into sewers or streams. Do not use combustible absorbents and do not mix with other materials.
Methods for Cleaning Up: Collect spillage for possible reuse. Clean up spills immediately and dispose of waste in accordance with appropriate Federal, State and local regulations.
Reference to Other Sections
See heading 8, Exposure Controls and Personal Protection

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling

General: It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications. Comply with the safety library publication No. 4 “Warnings and Instructions” as adopted by the Institute of Makers of Explosives.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and forearms thoroughly after handling. Do not eat, drink or smoke when using this product.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Contact manufacturer for appropriate grounding/bonding guidance. Comply with applicable regulations.

Storage Conditions: Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555. Store in a dry, cool and well-ventilated place. Keep/Store away from direct sunlight, extremely high or low temperatures, heat sources, ignition sources. Keep container closed when not in use. Store locked up.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Zinc. Copper and its alloys. Organic materials. Combustible materials.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

Fuels, diesel, no. 2 (68476-30-2)

USA ACGIH	ACGIH TWA (mg/m³)	100 mg/m³ (inhalable fraction and vapor, as total hydrocarbons) 8 h (skin)
USA ACGIH	ACGIH chemical category	Skin - potential significant contribution to overall exposure by the cutaneous route, Confirmed Animal Carcinogen with Unknown Relevance to Humans

Exposure Controls

Appropriate Engineering Controls: Ventilation System: Indoors: 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. Use explosion-proof equipment. / Outdoors: Work upwind.

Personal Protective Equipment: Personal Respirators (NIOSH Approved): A respirator is not needed under normal and intended conditions of use. If the exposure limit is exceeded and engineering controls are not feasible, use a mask with an organic vapor cartridge or positive pressure air supplied (SCBA) unit. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134).

Skin Protection: Gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure - Neoprene, PVC.

Eye Protection: Use chemical safety goggles and / or a full face shield where splashing is possible.

Hygiene Measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	White to tan colored thick cream. If aluminim is present, gray metal particles will be visible. If ammonium nitrate prill is present, white to tan colored granules will be visible.
Odor	:	Slight odor of fuel oil
Odor Threshold	:	Not available
pH	:	Not available
Evaporation Rate	:	Not available
Melting Point	:	Not available
Freezing Point	:	Not available
Boiling Point	:	Not available
Flash Point	:	165 °F (74 °C) (PMCC)
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 20 °C	:	Not available
Density	:	Not available
Specific Gravity	:	1.20 – 1.30
Solubility	:	Not available
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available
Explosive properties	:	Explosive; fire, blast or projection hazard
Explosion Data – Sensitivity to Mechanical Impact	:	Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	:	Not expected to present an explosion hazard due to static discharge.

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: May cause or intensify fire; oxidizer. May accelerate the burning of other combustible materials. Contact with organic material or combustible material may cause an explosive situation.

Chemical Stability: Stable under recommended handling and storage conditions (see section 7). May explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in large quantities.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Avoid temperatures above (212°F (100°C).

Incompatible Materials: Avoid all contamination, especially peroxides and chlorates. Alkaline contamination may liberate ammonia fumes.

Hazardous Decomposition Products: Gaseous nitrogen oxides and carbon oxides: Toxic decomposition products including carbon monoxide (CO) may migrate to off blast-site areas.

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified
Serious Eye Damage/Irritation: Causes serious eye irritation.
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Teratogenicity: Not classified
Carcinogenicity: Contains an ingredient suspected of causing cancer.
Specific Target Organ Toxicity (Repeated Exposure): May cause damage to organs through prolonged or repeated exposure.
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified
Aspiration Hazard: Not classified
Symptoms/Injuries After Inhalation: May cause respiratory irritation.
Symptoms/Injuries After Skin Contact: May cause skin irritation.
Symptoms/Injuries After Eye Contact: May cause serious eye irritation.
Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects. Overexposure to this material may result in methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.
Chronic Symptoms: Contains an ingredient suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Fuels, diesel, no. 2 (68476-30-2)	
LD50 Oral Rat	18.7 - 24.9 ml/kg
LD50 Dermal Rabbit	> 4300 mg/kg
ATE US (dust, mist)	3.60 mg/l/4h
Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h

SECTION 12: ECOLOGICAL INFORMATION

Toxicity
Ecology - General: This material is hazardous to the aquatic environment. Keep out of sewers and waterways.
Ecology - Water: Harmful to aquatic life with long lasting effects.

Fuels, diesel, no. 2 (68476-30-2)	
LC50 Fish 1	57 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])

Persistence and Degradability Not available
Bioaccumulative Potential

Ammonium nitrate (6484-52-2)	
BCF fish 1	(no bioaccumulation expected)
Log Pow	-3.1 (at 25 °C)

Mobility in Soil Not available
Other Adverse Effects
Other Information: Avoid release to the environment.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Treatment Methods: Uncontaminated and contaminated material may be placed in large diameter boreholes and detonated so that the explosive energy is utilized as originally intended. Dispose of under direct supervision of a qualified person according to local, state and federal regulations. Call Maine Drilling & Blasting Safety and Compliance

Department for recommendations and assistance.

Additional Considerations: This material may become a hazardous waste under certain conditions and must be collected, labeled and disposed of per state and federal hazardous waste regulations.

SECTION 14 - TRANSPORT INFORMATION

In Accordance with DOT

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E (AGENT, BLASTING, TYPE E)
Hazard Class : 1.5D
Identification Number : NA0332
Label Codes : 1.5D

Packing Group : II
ERG Number : 140

In Accordance with IMDG

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E (AGENT, BLASTING, TYPE E)
Hazard Class : 1
Identification Number : UN0332
Label Codes : 1.5D
EmS-No. (Fire) : F-B
EmS-No. (Spillage) : S-Y

In Accordance with IATA

Proper Shipping Name : AGENT, BLASTING TYPE E
Identification Number : UN0332
Hazard Class : 1
Label Codes : 1.5D

ERG Code (IATA) : 1L

In Accordance with TDG

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E
Packing Group : II
Hazard Class : 1.5D
Identification Number : UN0332
Label Codes : 1.5D

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations

MDB Blend 1966

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard Sudden release of pressure hazard Fire hazard

Fuels, diesel, no. 2 (68476-30-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ammonium nitrate (6484-52-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA Section 313 - Emission Reporting

US State Regulations
Fuels, diesel, no. 2 (68476-30-2)
U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - 24-Hour U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - Annual U.S. - New Jersey - Discharge Prevention - List of Hazardous Substances U.S. - New Jersey - Environmental Hazardous Substances List RTK - U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - California - Safer Consumer Products - Initial List of Candidate Chemicals and Chemical Groups U.S. - Texas - Effects Screening Levels - Long Term U.S. - Texas - Effects Screening Levels - Short Term
Ammonium nitrate (6484-52-2)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations 1966 Emulsion Blend	
WHMIS Classication	**Note: Explosives are not regulated under WHMIS. They are subject to the regulations of the Explosives Act of Canada.**

Canadian Regulations MDB Blend 1966	
WHMIS Classication	**Note: Explosives are not regulated under WHMIS. They are subject to the regulations of the Explosives Act of Canada.**
Fuels, diesel, no. 2 (68476-30-2)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 3 - Combustible Liquid Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects Class D Division 1 Subdivision B - Toxic material causing immediate and serious toxic effects
Ammonium nitrate (6484-52-2)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects
WHMIS Classification	Class B Division 6 - Reactive Flammable Material Class B Division 4 - Flammable Solid

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 08/24/2015

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

Party Responsible for the Preparation of This Document

Maine Drilling & Blasting
88 Gold Ledge Ave
Auburn, NH 03032
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NONEL® EZ DET® 1.4B

Technical Information

Nonelectric Blast Initiation System

Product Description

NONEL® nonelectric delay detonator EZ DET® 1.4B units consist of a length of orange shock tube with a surface detonator attached to one end and a Standard (#8) in-hole detonator on the other. The surface detonator is inside a color-coded plastic EZ™ Connector block to facilitate easy connections to shock tube leads. This block can hold up to 6 shock tube leads. Easy-to-read, color-coded delay tags display the delay number and nominal firing time prominently.

NONEL EZ DET units can be easily connected to one another to satisfy basic blast design requirements in construction, mining, and quarry operations. They can also be used in combination with NONEL MS, NONEL EZTL™ and/or NONEL TD detonators to satisfy complex blast design requirements and minimize inventory of initiation system components.

Application Recommendations

For detailed application recommendations, **ALWAYS** request a copy of Dyno Nobel's *Product Manual: NONEL® and PRIMACORD®* from your Dyno Nobel representative.

- **ALWAYS** select a NONEL EZ DET unit having more than enough tubing length to extend from the planned primer location in the borehole to the collar of the next hole.

Properties

SDS #1122

Net Explosive Content per 100 units 0.0810 kg
0.1785 lbs

This product is only available in the United States.

Nominal Time (msec)	Nominal Time (msec)	Nominal Time (msec)	Connector Block Color
17 / 350	17 / 500	17 / 700	Yellow
25 / 350	25 / 500	25 / 700	Red
42 / 350	42 / 500	42 / 700	White
25 / 375			Red

Hazardous Shipping Description
Detonator assemblies nonelectric,
1.4B, UN 0361 PG II

See Product Disclaimer on page 2

DYNO Dyno Nobel
Groundbreaking Performance™

NONEL® EZ DET® 1.4B

Technical Information

Application Recommendations (continued)

- **ALWAYS** protect the plastic EZ Connector block and all shock tube leads from impact or damage during the loading and stemming operations. Use care when placing blasting mats and cover material on top of the blasting circuit. The EZ Connector block contains a detonator and is subject to detonation caused by abuse such as impact. Shock tube which has been cut, ruptured or damaged may cause misfires.
- **ALWAYS** be sure that the shock tube(s) are securely inserted, one at a time, into the EZ Connector block. The head of the EZ Connector block should rise to accept the shock tube and return to a closed position with an audible click.
- **ALWAYS** ensure that individual shock tubes remain aligned side by side in the connector channel and do not cross one over the another on insertion.
- **NEVER** use NONEL EZ DET units with detonating cord. The low strength surface detonator will not initiate detonating cord and may cause misfires.
- **NEVER** attempt to disassemble the delay detonator from the plastic EZ Connector block or use the detonator without the connector.
- **NEVER** place more than 6 shock tube leads into the plastic EZ Connector block. Misfires may result.
- **NEVER** pull, stretch, kink or put tension on shock tube such that the tube could break.
- **NEVER** splice NONEL EZ DET shock tube together to extend between holes.
- **NEVER** connect NONEL EZ DET units together until all holes have been primed, loaded and stemmed and the blast site has been cleared.

Transportation, Storage and Handling

- NONEL EZ DET must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulations.
- For maximum shelf life (3 years), NONEL EZ DET must be stored in a cool, dry, well ventilated magazine. Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives

Packaging

Length		Case Type	Quantity / Case
m	ft		
3.5	12	D*	90
4.5	16	D*	60
7	24	D*	60
9	30	D*	40
12	40	D*	30
15	50	D*	30
18	60	D*	25
24	80	DC	40
30	100	DC	40
37	120	DC	30

- Length rounded to nearest one-half meter.
- Case weight varies by length & delay; see case label for exact weight.

* Always shipped with 2 cases strapped together.
Case dimension width doubles.

Note: This product is also available with a High Strength cap. For more information, please contact your local Dyno Nobel sales representative.

Case Dimensions

Detpak Case (DC)	48 x 45 x 26 cm	18¾ x 17¾ x 10¾ in
Detpak (D)	44 x 22 x 25 cm	17 ½ x 8 ¾ x 10 in

Dyno Nobel Inc.
2795 East Cottonwood Parkway, Suite 500, Salt Lake City, Utah 84121 USA
Phone 800-732-7534 Fax 801-328-6452 Web www.dynonobel.com

TECHNICAL DATA SHEET

NONEL® EZTL™

Nonelectric Trunkline Delay Detonators

Properties

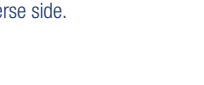
SDS #1122

Net Explosive Content per 100 units — 0.0240 kg / 0.0529 lbs

Delay Time msec	Connector Block Color
9	Green
17	Yellow
25	Red
33	Green
42	White
67	Blue
100	Black
109	Black

Hazardous Shipping Description

- Detonator assemblies nonelectric, 1.4B, UN 0361 PG II



PRODUCT DESCRIPTION

NONEL nonelectric delay detonator EZTL units consist of a length of yellow shock tube, with a surface detonator attached to one end and the other end sealed. The detonator is housed in a plastic EZ Connector block which facilitates easy connection to shock tube. A white J-hook is affixed near the sealed end. Easy-to-read, color-coded delay tags display the delay number and nominal firing time prominently.

EZTL detonators are designed for use with NONEL MS and EZ DET® units to provide effective and accurate surface timing between blast holes and/or rows of blast holes in surface and underground blasting designs.

APPLICATION RECOMMENDATIONS

- For detailed application recommendations, ALWAYS request a copy of Dyno Nobel's Product Manual: NONEL® and PRIMACORD® from your Dyno Nobel representative.
- ALWAYS be sure that the shock tube(s) are securely inserted, one at a time, into the plastic EZ connector. The head of the connector block should rise to accept the tube, and return to a closed position with an audible click
- ALWAYS ensure that the individual shock tubes remain aligned side by side in the EZ connector channel and do not cross over one another during insertion.
- ALWAYS protect the plastic EZ connector and all shock tube leads from impact or damage. Use care when placing blasting mats and cover material on top of the blasting circuit. The EZ connector contains a detonator and is subject to detonation caused by abuse such as impact. Shock tube which has been cut, ruptured or damaged may cause misfires

DYNO® Dyno Nobel

TECHNICAL DATA SHEET

NONEL® EZTL™

Nonelectric Trunkline Delay Detonators

Properties Cont.

Packaging

Length		Case Type	Quantity / Case
meters	feet		
3.5	12	D*	90
6	20	D*	75
9	30	D*	60
12	40	D*	50
15	50	D*	45
18	60	D*	35

- Length rounded to nearest one-half meter.
- Case weight varies by length & delay; see case label for exact weight.

* Always shipped with 2 cases strapped together. Case dimension width doubles.

Case Dimensions

Detpak (D)	44 x 22 x 25 cm	17½ x 8¾ x 10 in

APPLICATION RECOMMENDATIONS - continued

- NEVER use NONEL EZTL detonators with detonating cord. The low strength surface detonator will not initiate detonating cord
- NEVER attempt to disassemble the delay detonator from the EZ connector block or use the detonator without the connector
- NEVER place more than 6 shock tube leads into an EZ connector block, misfires may result
- NEVER tie-in NONEL EZTL units to the blast initiation system until all blasthole surface connections have been made and inspected. Ensure the blast site has been cleared. It is important to remove nonessential personnel and equipment prior to the hole-to-hole connection process. Dyno Nobel Field Technical Representatives and product application guides can assist with unique connection situations.

TRANSPORTATION, STORAGE AND HANDLING

- NONEL EZTL must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulation
- For maximum shelf life (3 years), NONEL EZTL must be stored in a cool, dry, well ventilated magazine. Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet “Prevention of Accidents in the Use of Explosive Materials” packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives

ADDITIONAL INFORMATION – Visit **dynonobel.com** for Brochures and Case Studies related to this product.

DYNO® Dyno Nobel

Safety Data Sheet

According to: 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS
Trade Name: NONEL® Non-electric Delay Detonators

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800 Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com

SDS #: 1122
Date: 07/20/2020
Supersedes: 05/22/2015

Product identifier
Trade name: **NONEL® Non-electric Delay Detonators**
Article number: 1122
Other product identifiers:

NONEL® MS
NONEL® EZ DET®
NONEL® MS ARCTIC
NONEL® EZTL™
NONEL® LP NONEL® EZ DRIFTER ®
NONEL® SL
NONEL® SUPER
NONEL® TD
NONEL® MS CONNECTOR
NONEL® TWINPLEX™
NONEL® STARTER

Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

Application of the substance / the mixture
Explosive product.
Commercial blasting applications

Emergency telephone number:
CHEMTREC 1-800-424-9300 (US/Canada)
+01 703-527-3887 (International)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
Classifications listed also are applicable to the OSHA GHS Hazard Communication Standard (29CFR1910.1200).


exploding bomb

Expl. 1.1 H201 Explosive; mass explosion hazard.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC


Xn; Harmful

R22: Harmful if swallowed.


E; Explosive

R2: Risk of explosion by shock, friction, fire or other sources of ignition.

Information concerning particular hazards for human and environment: The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Classification system: The classification is according to the latest editions of the EU-lists, and extended by company and literature data.
The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.
Additional information: There are no other hazards not otherwise classified that have been identified.
0 percent of the mixture consists of component(s) of unknown toxicity

Label elements
Labelling according to Regulation (EC) No 1272/2008
The product is additionally classified and labelled according to the Globally Harmonized System within the United States (GHS).
The product is classified and labelled according to the CLP regulation.
Hazard pictograms

GHS01

Signal word:	Danger
Hazard-determining components of labelling:	potassium perchlorate pentaerythritol tetranitrate (PETN)
Hazard statements:	H201 Explosive; mass explosion hazard.
Precautionary statements:	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P250	Do not subject to grinding/shock/friction.
P264	Wash thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P240	Ground/bond container and receiving equipment.
P270	Do not eat, drink or smoke when using this product.
P373	DO NOT fight fire when fire reaches explosives.
P370 + P380	In case of fire: Evacuate area.
P372	Explosion risk in case of fire.
P401	Store in accordance with local/regional/national/international regulations.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
Additional information:	EUH208 Contains diazodinitro phenol (DDNP). May produce an allergic reaction.
Hazard description:	
WHMIS-symbols:	Explosive products are not classified under WHMIS.
NFPA ratings (scale 0 - 4):	Not available.
HMIS-ratings (scale 0 - 4):	Not available

HMIS Long Term Health Hazard Substances	
13424-46-9	lead diazide

7439-92-1	lead
13463-67-7	titanium dioxide
7758-97-6	lead chromate
7778-74-7	potassium perchlorate

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Explosive Product Notice: PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Some delay periods may contain potassium perchlorate. Those that do contain between from about 4 to a maximum of approximately 60 mg perchlorate per detonator.

Dangerous components:	
CAS: 78-11-5 EINECS: 201-084-3 Index number: 603-035-00-5	pentaerythritol tetranitrate (PETN) E R3
	Unst. Expl., H200
CAS: 13424-46-9 EINECS: 236-542-1 Index number: 082-003-00-7	lead diazide T Repr. Cat. 1, 3 R61; Xn R62-20/22; E R3; N R50/53 R33
	Unst. Expl., H200 Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 Aquatic Acute 1, H400; Aquatic Chronic 1, H410 Acute Tox. 4, H302; Acute Tox. 4, H332
CAS: 7439-92-1 EINECS: 231-100-4	lead Repr. Cat. 1 R60-61-48/23/25; N R50/53
	Repr. 1A, H360FD; STOT RE 1, H372 Aquatic Acute 1, H400; Aquatic Chronic 1, H410
CAS: 7440-21-3 EINECS: 231-130-8	silicon R11
	Flam. Sol. 2, H228
CAS: 7782-49-2 EINECS: 231-957-4 Index number: 034-001-00-2	selenium R23/25 R33-53

	Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373 Aquatic Chronic 4, H413
CAS: 1314-41-6 EINECS: 215-235-6 Index number: 082-001-00-6	orange lead T Repr. Cat. 1, 3 R61; Xn R62-20/22; N R50/53 R33
	Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 Aquatic Acute 1, H400; Aquatic Chronic 1, H410 Acute Tox. 4, H302; Acute Tox. 4, H332
CAS: 13463-67-7 EINECS: 236-675-5	titanium dioxide substance with a Community workplace exposure limit
CAS: 10294-40-3 EINECS: 233-660-5 Index number: 056-002-00-7	barium chromate Xn R20/22
	Carc. 1A, H350 Acute Tox. 4, H302; Acute Tox. 4, H332
CAS: 7758-97-6 EINECS: 231-846-0 Index number: 082-004-00-2	lead chromate T Carc. Cat. 2, Repr. Cat. 1, 3 R45-61; Xn R62; N R50/53 R33
	Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 Aquatic Acute 1, H400; Aquatic Chronic 1, H410
CAS: 7727-43-7 EINECS: 231-784-4	barium sulphate, natural substance with a Community workplace exposure limit
CAS: 7778-74-7 EINECS: 231-912-9 Index number: 017-008-00-5	potassium perchlorate Xn R22; O R9
	Ox. Sol. 1, H271 Acute Tox. 4, H302
CAS: 61790-53-2	Diatomaceous earth (Silica-Amorphous) substance with a Community workplace exposure limit
CAS: 7439-98-7 EINECS: 231-107-2	molybdenum substance with a Community workplace exposure limit
CAS: 7440-33-7 EINECS: 231-143-9	tungsten substance with a Community workplace exposure limit
CAS: 7429-90-5 EINECS: 231-072-3 Index number: 013-001-00-6	aluminium powder (pyrophoric) F R15-17
	Pyr. Sol. 1, H250; Water-react. 2, H261
CAS: 7440-36-0 EINECS: 231-146-5	antimony substance with a Community workplace exposure limit
CAS: 2691-41-0 EINECS: 220-260-0	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) T R24; Xn R22; E R2
	Expl. 1.1, H201 Acute Tox. 3, H301; Acute Tox. 3, H311
CAS: 4682-03-5	diazodinitro phenol (DDNP) Xi R36/38; Xi R43; E R3
	Unst. Expl., H200

	Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317

SVHC	
13424-46-9	lead diazide
1314-41-6	orange lead
7758-97-6	lead chromate

Additional information: For the listed ingredients, the identity and exact percentages are being withheld as a trade secret.
For the wording of the listed risk phrases refer to section 16.

SECTION 4: FIRST AID MEASURES

Description of first aid measures
General information: Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
After inhalation: Unlikely route of exposure.
Supply fresh air; consult doctor in case of complaints.
After skin contact: Generally the product does not irritate the skin. Wash with soap and water.
If skin irritation is experienced, consult a doctor.
After eye contact: Remove contact lenses if worn.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After swallowing: Rinse out mouth and then drink plenty of water.
Do not induce vomiting; call for medical help immediately.
Most important symptoms and effects, both acute and delayed Blast injury if mishandled.
Hazards
Danger of blast or crush-type injuries. Harmful if swallowed.
Danger of disturbed cardiac rhythm.
Indication of any immediate medical attention and special treatment needed
Medical supervision for at least 48 hours.
Product may produce physical injury if mishandled. Treatment of these injuries should be based on the blast and compression effects.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing agents: DO NOT fight fire when fire reaches explosives.
For safety reasons unsuitable extinguishing agents: None.
Special hazards arising from the substance or mixture
DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors. It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.
Explosive; mass explosion hazard.
Advice for firefighters
Protective equipment: Wear self-contained respiratory protective device.
Wear fully protective suit.
Additional information
Eliminate all ignition sources if safe to do so.
Flammability Classification: (defined by 29 CFR 1910.1200) Explosive. Can explode under fire conditions. Individual devices will randomly explode. Mass explosion of multiple devices is possible under certain conditions. Burning material may produce toxic and irritating vapors. In unusual cases, shrapnel may be thrown from exploding devices under

containment. See 2012 Emergency response Guidebook for further information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Remove persons from danger area.
Ensure adequate ventilation
Wear protective clothing.
Protect from heat. Evacuate area.
Isolate area and prevent access.
Environmental precautions
No special measures required.

Methods and material for containment and cleaning up
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose unusable material as waste according to item 13.
Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling
Open and handle receptacle with care.
Handle with care. Avoid jolting, friction and impact.
Use only in well ventilated areas.
Do not subject to grinding/shock/friction.
Information about fire - and explosion protection: Protect from heat.
Prevent impact and friction.
Emergency cooling must be available in case of nearby fire.
Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: Store in a cool location.
Avoid storage near extreme heat, ignition sources or open flame.
Information about storage in one common storage facility: Store away from foodstuffs.
Further information about storage conditions: Store under lock and key and with access restricted to technical experts or their assistants only.
Keep away from heat.
Specific end use(s): No further relevant information available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical facilities: No further data; see item 7.

Control parameters

Ingredients with limit values that require monitoring at the workplace:	
13424-46-9 lead diazide	
PEL (USA)	Long-term value: 0,05 mg/m³ as Pb; See 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m³

	as Pb;*8-hr TWA; See Pocket Guide App. C
TLV (USA)	Long-term value: 0,05 mg/m³ as Pb; BEI
EL (Canada)	Long-term value: 0,05 mg/m³ as Pb; IARC 2A, R
7439-92-1 lead	
PEL (USA)	Long-term value: 0,05* mg/m³ *see 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m³ *8-hr TWA,excl. lead arsenate;See PocketGuideApp.C
TLV (USA)	Long-term value: 0,05* mg/m³ *and inorganic compounds, as Pb; BEI
EL (Canada)	Long-term value: 0,05 mg/m³ R; IARC 2B
EV (Canada)	Long-term value: 0,05 mg/m³ as Pb, Skin (organic compounds)
7440-21-3 silicon	
PEL (USA)	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust;**respirable fraction
EV (Canada)	Long-term value: 10 mg/m³ total dust
7782-49-2 selenium	
PEL (USA)	Long-term value: 0,2 mg/m³ as Se
REL (USA)	Long-term value: 0,2 mg/m³ as Se
TLV (USA)	Long-term value: 0,2 mg/m³ as Se
EL (Canada)	Long-term value: 0,1 mg/m³
EV (Canada)	Long-term value: 0,2 mg/m³
1314-41-6 orange lead	
PEL (USA)	Long-term value: 0,05 mg/m³ as Pb; See 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m³ as Pb;*8-hr TWA; See Pocket Guide App. C
TLV (USA)	Long-term value: 0,05 mg/m³ as Pb; BEI
EL (Canada)	Long-term value: 0,05 mg/m³ as Pb; IARC 2A, R

EV (Canada)	Long-term value: 0,05 mg/m³ as Pb, Skin (organic compounds)
13463-67-7 titanium dioxide	
PEL (USA)	Long-term value: 15* mg/m³ *total dust
REL (USA)	See Pocket Guide App. A
TLV (USA)	Long-term value: 10 mg/m³ withdrawn from NIC
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust;**respirable fraction; IARC 2B
EV (Canada)	Long-term value: 10 mg/m³ total dust
10294-40-3 barium chromate	
PEL (USA)	Long-term value: 0,005* mg/m³ Ceiling limit: 0,1** mg/m³ *as Cr(VI) **as CrO3; see 29 CFR 1910,1026
REL (USA)	Long-term value: 0,0002 mg/m³ as Cr; See Pocket Guide Apps. A and C
TLV (USA)	Long-term value: 0,01 mg/m³ as Cr
EL (Canada)	Long-term value: 0,01 mg/m³ as Cr; ACGIH A1 IARC 1
7758-97-6 lead chromate	
IOELV (EU)	Long-term value: 2 mg/m³ as Cr
PEL (USA)	Long-term value: 0,005* mg/m³ Ceiling limit: 0,1** mg/m³ *as Cr(VI) **as CrO3; see 29 CFR 1910,1026
REL (USA)	Long-term value: 0,0002 mg/m³ as Cr; See Pocket Guide Apps. A and C
TLV (USA)	Long-term value: 0,05* 0,012** mg/m³ *as Pb; BEI ; **as Cr
EL (Canada)	Long-term value: 0,05* 0,012** mg/m³ ACIGH A2, IARC 2A; R; *as Pb;**as Cr
EV (Canada)	Long-term value: 0,012* 0,05** mg/m³ *as Cr, **as Pb
7727-43-7 barium sulphate, natural	
PEL (USA)	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV (USA)	Long-term value: 5* mg/m³ *inhalable fraction; E
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust, **respirable fraction

EV (Canada)	Long-term value: 10 mg/m³ total dust
61790-53-2 Diatomaceous earth (Silica-Amorphous)	
PEL (USA) REL (USA) TLV (USA) EL (Canada) EV (Canada)	20mppcf or 80mg/m³ /%SiO^2 Long-term value: 6 mg/m³ See Pocket Guide App. C TLV withdrawn Long-term value: 4* 1,5** mg/m³ *total, **respirable Long-term value: 10* 3** mg/m³ uncalcined; *inhalable;**respirable
7439-98-7 molybdenum	
PEL (USA) TLV (USA) EL (Canada) EV (Canada)	Long-term value: 15* mg/m³ *Total dust Long-term value: 10* 3** mg/m³ as Mo; *inhalable fraction ** respirable fraction Long-term value: 3* 10** mg/m³ as Mo; *respirable **inhalable Long-term value: 10* 3** 0,5*** mg/m³ metal,insol.compd.:*inh;**resp;sol.compd.:***resp
7440-33-7 tungsten	
PEL (USA) REL (USA) TLV (USA) EL (Canada) EV (Canada) 	and insoluble compounds, as We Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W Short-term value: 10* 3** mg/m³ Long-term value: 5* 1** mg/m³ (as tungsten; compds.:*water-insol.;**water-sol.
7429-90-5 aluminium powder (pyrophoric)	
PEL (USA) REL (USA) TLV (USA) EL (Canada) EV (Canada)	Long-term value: 15*; 15** mg/m³ *Total dust; ** Respirable fraction Long-term value: 10* 5** mg/m³ as Al*Total dust**Respirable/pyro powd./welding f. Long-term value: 1* mg/m³ as Al; *as respirable fraction Long-term value: 1,0 mg/m³ respirable, as Al Long-term value: 5 mg/m³ aluminium-containing (as aluminium)
7440-36-0 antimony	
PEL (USA) REL (USA)	Long-term value: 0,5 mg/m³ as Sb Long-term value: 0,5 mg/m³ as Sb

TLV (USA) EL (Canada) EV (Canada)	Long-term value: 0,5 mg/m³ as Sb Long-term value: 0,5 mg/m³ Long-term value: 0,5 mg/m³
DNELs No further relevant information available. **PNECs** No further relevant information available.	
Ingredients with biological limit values:	
13424-46-9 lead diazide	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead
7439-92-1 lead	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead 10 µg/100 ml Medium: blood Time: not critical Parameter: Lead (women of child bearing potential)
1314-41-6 orange lead	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead
10294-40-3 barium chromate	
BEI (USA)	25 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Total chromium (fume) 10 µg/L Medium: urine Time: increase during shift Parameter: Total chromium (fume)
7758-97-6 lead chromate	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead 10 µg/100 ml Medium: blood Time: not critical Parameter: Lead (women of child bearing potential)

Additional information: The lists valid during the making were used as basis.

Exposure controls
Personal protective equipment:
General protective and hygienic measures: The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Respiratory protection: Not required under normal conditions of use.
Respiratory protection may be required after product use.
Protection of hands: Wear gloves for the protection against mechanical hazards according to NIOSH or EN 388.
Material of gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
Penetration time of glove material: The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
Eye protection:


Safety glasses

Face protection
Body protection: Impervious protective clothing
Limitation and supervision of exposure into the environment: No further relevant information available.
Risk management measures: Organizational measures should be in place for all activities involving this product.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
General Information

Appearance:	
Form:	Solid material
Colour:	According to product specification
Odour:	Characteristic
Odour threshold:	Not determined.
pH-value:	Not applicable.
Change in condition	
Melting point/Melting range:	Not Determined.
Boiling point/Boiling range:	Undetermined.
Flash point:	Not applicable.
Flammability (solid, gaseous):	Explosive; mass explosion hazard.
Auto/Self-ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Self-igniting:	Product is not self-igniting.
Danger of explosion:	Risk of explosion by shock, friction, fire or other sources of ignition.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapour pressure:	Not applicable.

Density:	Not determined.
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with water:	Variable, dependent upon product composition and packaging.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
Other information	No further relevant information available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity
Chemical stability
Thermal decomposition / conditions to be avoided: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Possibility of hazardous reactions: Danger of explosion. Toxic fumes may be released if heated above the decomposition point.
Conditions to avoid: No further relevant information available.
Incompatible materials: No further relevant information available.
Hazardous decomposition products: Carbon monoxide and carbon dioxide Hydrocarbons Nitrogen oxides Chlorine compounds Leadoxide vapour Bariumoxide vapour Toxic metal oxide smoke Danger of forming toxic pyrolysis products.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity:
LD/LC50 values relevant for classification:
7439-92-1 lead
Oral LD50 >2000 mg/kg (rat)
7782-49-2 selenium
Oral LD50 6700 mg/kg (rat)
7758-97-6 lead chromate
Oral LD50 12000 mg/kg (mouse)
Primary irritant effect:
on the skin: Not a skin irritant in unused form. Vapors/particles from used product are possibly irritating to skin.
on the eye: Not an eye irritant in unused form. Vapors/particles from used product are possibly irritating to eyes.
Sensitisation: No sensitising effects known.
Subacute to chronic toxicity: No further relevant information available.
Additional toxicological information: The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version: Harmful
Acute effects (acute toxicity, irritation and corrosivity): Danger of blast or crush-type injuries.
Harmful if swallowed.
Repeated dose toxicity: No further relevant information available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity: No further relevant information available.

Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Additional ecological information:
General notes: Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No further relevant information available.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods
Recommendation: Must not be disposed together with household garbage. Do not allow product to reach sewage system. Damaged materials pose a danger to anyone in the immediate area; consult experts for disposal of damaged products.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.
Uncleaned packaging:
Recommendation: Disposal must be made according to official regulations.

SECTION 14: TRANSPORT INFORMATION

UN-Number
DOT, ADR, IMDG: UN0360
IATA: FORBIDDEN
UN proper shipping name
DOT, IMDG: DETONATOR ASSEMBLIES, NON-ELECTRIC
ADR: 0360 DETONATOR ASSEMBLIES, NON-ELECTRIC
IATA: FORBIDDEN
Transport hazard class(es)
DOT
Class:

1.1
Label: 1.1
ADR, IMDG
Class:

1.1
Label: 1.1B
IATA
Class: FORBIDDEN
Packing group
DOT, ADR, IMDG: II

IATA:	FORBIDDEN
Environmental hazards:	
Marine pollutant:	No
Special marking (IATA):	FORBIDDEN BY AIR.
Special precautions for user:	Not applicable.
EMS Number:	F-B,S-X
Segregation groups	Perchlorates
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	
Transport/Additional information:	Not applicable.

ADR	
Limited quantities (LQ)	0
Excepted quantities (EQ)	Code: E0 Not permitted as Excepted Quantity
Tunnel restriction code	1
IMDG	
Limited quantities (LQ)	0
Excepted quantities (EQ)	Code E0 Not permitted as Excepted Quantity
IATA	FORBIDDEN
UN "Model Regulation":	UN0360, DETONATOR ASSEMBLIES, NON- ELECTRIC, 1.1B, II

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

United States (USA)

SARA	
Section 355 (extremely hazardous substances):	
None of the ingredients are listed.	
Section 313 (Specific toxic chemical listings):	
13424-46-9	lead diazide
7439-92-1	lead
7782-49-2	selenium
1314-41-6	orange lead
10294-40-3	barium chromate
7758-97-6	lead chromate
7727-43-7	barium sulphate, natural
7429-90-5	aluminium powder (pyrophoric)
7440-36-0	antimony
TSCA (Toxic Substances Control Act):	
All ingredients are listed.	
Proposition 65 (California):	

Chemicals known to cause cancer:		
13424-46-9	lead diazide	
7439-92-1	lead	
1314-41-6	orange lead	
13463-67-7	titanium dioxide	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Chemicals known to cause reproductive toxicity for females:		
7439-92-1	lead	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Chemicals known to cause reproductive toxicity for males:		
7439-92-1	lead	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Chemicals known to cause developmental toxicity:		
13424-46-9	lead diazide	
7439-92-1	lead	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Carcinogenic Categories		
EPA (Environmental Protection Agency)		
13424-46-9	lead diazide	B2
7439-92-1	lead	B2
7782-49-2	selenium	D
1314-41-6	orange lead	B2
10294-40-3	barium chromate	A(inh), D(oral), K/L(inh), CBD(oral)
7758-97-6	lead chromate	K
7727-43-7	barium sulphate, natural	D, CBD(inh), NL(oral)
7778-74-7	potassium perchlorate	NL
2691-41-0	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	D
IARC (International Agency for Research on Cancer)		
13424-46-9	lead diazide	2A
7439-92-1	lead	2B
7782-49-2	selenium	3
1314-41-6	orange lead	2A
13463-67-7	titanium dioxide	2B
10294-40-3	barium chromate	1
7758-97-6	lead chromate	1
61790-53-2	Diatomaceous earth (Silica-Amorphous)	3
TLV (Threshold Limit Value established by ACGIH)		

13424-46-9	lead diazide	A3
7439-92-1	lead	A3
1314-41-6	orange lead	A3
13463-67-7	titanium dioxide	A4
10294-40-3	barium chromate	A1
7758-97-6	lead chromate	A2
7439-98-7	molybdenum	A3
7429-90-5	aluminium powder (pyrophoric)	A4
NIOSH-Ca (National Institute for Occupational Safety and Health)		
13463-67-7	titanium dioxide	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Canada		
Canadian Domestic Substances List (DSL)		
Some components are listed on the NDSL.		
All ingredients are listed.		
Canadian Ingredient Disclosure list (limit 0.1%)		
7439-92-1	lead	
7782-49-2	selenium	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Canadian Ingredient Disclosure list (limit 1%)		
7439-98-7	molybdenum	
7440-33-7	tungsten	
7429-90-5	aluminium powder (pyrophoric)	
7440-36-0	antimony	
Other regulations, limitations and prohibitive regulations		
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.		
Substances of very high concern (SVHC) according to REACH, Article 57		
13424-46-9	lead diazide	
1314-41-6	orange lead	
7758-97-6	lead chromate	

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: OTHER INFORMATION

Phrases pertinentes

H200 Unstable explosives.	
H201 Explosive; mass explosion hazard.	
H228 Flammable solid.	

H250 Catches fire spontaneously if exposed to air.	
H261 In contact with water releases flammable gases.	
H271 May cause fire or explosion; strong oxidiser.	
H301 Toxic if swallowed.	
H302 Harmful if swallowed.	
H311 Toxic in contact with skin.	
H315 Causes skin irritation.	
H317 May cause an allergic skin reaction.	
H319 Causes serious eye irritation.	
H331 Toxic if inhaled.	
H332 Harmful if inhaled.	
H350 May cause cancer.	
H360Df May damage the unborn child. Suspected of damaging fertility.	
H360FD May damage fertility. May damage the unborn child.	
H372 Causes damage to organs through prolonged or repeated exposure.	
H373 May cause damage to organs through prolonged or repeated exposure.	
H400 Very toxic to aquatic life.	
H410 Very toxic to aquatic life with long lasting effects.	
H413 May cause long lasting harmful effects to aquatic life.	
R11 Highly flammable.	
R15 Contact with water liberates extremely flammable gases.	
R17 Spontaneously flammable in air.	
R2 Risk of explosion by shock, friction, fire or other sources of ignition.	
R20/22 Harmful by inhalation and if swallowed.	
R22 Harmful if swallowed.	
R23/25 Toxic by inhalation and if swallowed.	
R24 Toxic in contact with skin.	
R3 Extreme risk of explosion by shock, friction, fire or other sources of ignition.	
R33 Danger of cumulative effects.	
R36/38 Irritating to eyes and skin.	
R43 May cause sensitisation by skin contact.	
R45 May cause cancer.	
R48/23/25 Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.	
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	
R53 May cause long-term adverse effects in the aquatic environment.	
R60 May impair fertility.	
R61 May cause harm to the unborn child.	
R62 Possible risk of impaired fertility.	
R9 Explosive when mixed with combustible material.	

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for	

Dangerous Goods DOT: US Department of Transportation	
IATA: International Air Transport Association	
GHS: Globally Harmonised System of Classification and Labelling of Chemicals	
ACGIH: American Conference of Governmental Industrial Hygienists	
EINECS: European Inventory of Existing Commercial Chemical Substances	
ELINCS: European List of Notified Chemical Substances	
CAS: Chemical Abstracts Service (division of the American Chemical Society)	
NFPA: National Fire Protection Association (USA)	
HMIS: Hazardous Materials Identification System (USA)	
WHMIS: Workplace Hazardous Materials Information System (Canada)	
DNEL: Derived No-Effect Level (REACH)	
PNEC: Predicted No-Effect Concentration (REACH)	
LC50: Lethal concentration, 50 percent	
LD50: Lethal dose, 50 percent	
Expl. 1.1: Explosives, Division 1.1	
Unst. Expl.: Explosives, Unstable explosives	
Flam. Sol. 2: Flammable solids, Hazard Category 2	
Pyr. Sol. 1: Pyorphoric Solids, Hazard Category 1	
Water-react. 2: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 2	
Ox. Sol. 1: Oxidising Solids, Hazard Category 1	
Acute Tox. 3: Acute toxicity, Hazard Category 3	
Acute Tox. 4: Acute toxicity, Hazard Category 4	
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2	
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2	
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1	
Carc. 1A: Carcinogenicity, Hazard Category 1A Carc. 1B: Carcinogenicity, Hazard Category 1B	
Repr. 1A: Reproductive toxicity, Hazard Category 1A Repr. 1A: Reproductive toxicity, Hazard Category 1A	
STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1	
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2	
Aquatic Acute 1: Hazardous to the aquatic environment - AcuteHazard, Category 1	
Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1	
Aquatic Chronic 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4	

Sources
SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902

Safety Data Sheet

According to: 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS
Trade Name: NONEL® Non-electric Delay Detonators

Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

Party Responsible for the Preparation of this Document
Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-480

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TECHNICAL DATA SHEET

CAST BOOSTERS

TROJAN® SPARTAN®

Cast Booster

Properties

SDS #1108

Density	g/cc avg	1.65
Velocity	m/sec	7,550
	ft/s	24,800
Detonation Pressure	Kbars	235
Water Resistance		6 months with no loss of sensitivity
Shelf Life Maximum		5 years from date of production
Maximum Usage Temperature*		66°C / 150°F

*Never expose explosive materials to sources of heat exceeding 66°C (150°F) or to open flame, unless such materials or procedures for their use have been recommended for such exposure by the manufacturer.

All Dyno Nobel Inc. energy and gas volume values except Velocity and Detonation Pressure are calculated using PRODET™ the computer code developed by Dyno Nobel Inc. for its exclusive use. Other computer codes may give different values.

Velocity and Detonation Pressure are the result of empirical methods during May 2009.

Hazardous Shipping Description

- UN 0042 Boosters, 1.1D PG II

PRODUCT DESCRIPTION

TROJAN SPARTAN cast boosters are detonator sensitive, high density, high energy molecular explosives avaliable in various sizes designed to optimize initiation of all booster sensitive explosives. All TROJAN SPARTAN boosters are manufactured with an internal through-tunnel and detonator well for easy application with either electric, electronic or nonelectric detonators or 10.6 g/m (50 gr/ft) minimum strength detonating cord.

TROJAN SPARTAN boosters are formulated from the highest quality PETN and other high explosive materials ensuring reliability, consistency and durability in all blasting environments. The fluorescent green container and clear printing makes the TROJAN SPARTAN booster more visible on the blast site (as well as in low light situations) and reduces the possibility of misplaced charges. The redesigned Caplock™ holds the detonator in place more securely and makes it more difficult for the detonator to be pulled out of the capwell position while it is being lowered into the borehole.

APPLICATION RECOMMENDATIONS

- NEVER force the detonator into the through-tunnel, the detonator-well or otherwise attempt to clear these areas if obstructed. If the through-tunnel or detonator-well does not accommodate the detonator, do not use the booster. Notify your Dyno Nobel representative.

DYNO® Dyno Nobel

TECHNICAL DATA SHEET

TROJAN® SPARTAN®

Cast Booster

Properties Cont.

Packaging

Unit Weight		Unit Dimensions				Case Quantity	Gross Weight/Case	
		Length		Diameter				
g	oz	cm	in	cm	in		kg	lbs
90*	3.2	11.9	4.7	2.7	1.1	150	14.0	30.9
150	5.5	11.9	4.7	3.6	1.4	95	15.0	33.1
200	7	11.7	4.6	4.1	1.6	72	15.6	34.4
350	12	11.9	4.7	5.0	2.0	49	17.6	38.9
400	14	11.9	4.7	5.5	2.2	40	16.8	37.0
450	16	11.9	4.7	5.8	2.3	36	17.4	38.3
900*	32	12.9	5.1	7.9	3.1	18	17.8	39.2

* The Caplock feature is not available on these boosters because the shells are made of cardboard instead of plastic.

Note: All weights and dimensions are approximate.

Case Dimensions

42 x 33 x 14 cm 16 ½ x 13 x 5 ½ in

APPLICATION RECOMMENDATIONS - continued

- ALWAYS use detonating cord with a coreload of 10.6 g/m (50 gr/ft) or higher when initiating the TROJAN SPARTAN booster with detonating cord.
- Minimum detonator is No. 8 strength for temperatures above -40° C (-40° F). A high strength detonator is recommended for temperatures below -40° C (-40° F).
- Extremely low temperatures do not affect the performance of cast boosters with commercial detonators. Low temperatures do affect detonators and detonating cord. Be certain your initiation system is suitable for your application in extremely low temperatures. Cast boosters are more susceptible to breakage during handling in extremely cold temperatures.

TRANSPORTATION, STORAGE AND HANDLING

- Dyno Nobel cast boosters must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulations.
- For maximum shelf life (5 years), Dyno Nobel cast boosters must be stored in a cool, dry, well ventilated magazine. Explosive inventory should be rotated. Avoid using new materials before the old.

ADDITIONAL INFORMATION – Visit **dynonobel.com** for Brochures and Case Studies related to this product.

DYNO® Dyno Nobel

Safety Data Sheet

According to: 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS
Trade Name: CAST BOOSTERS

SECTION 1 – IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800
Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
www.dynonobel.com

SDS #: 1108
Date: 08/26/2020
Supersedes: 07/20/2020

1.1 Product Identifier
Trade Name: CAST BOOSTERS
Article Number:
No other identifiers
1108
Other Product Identifiers:

DYNO® CORD SENSITIVE BOOSTERS - CS35, CS45, CS90, CS135
TROJAN® SPARTAN®
TROJAN® SPARTAN® Slider
TROJAN® Stinger
TROJAN® NB
TROJAN® NB UNIVERSAL
TROJAN® Twinplex
TROJAN® SPARTAN® SR
TROJAN® SPARTAN® Cone
TROJAN® Ringprime
TROJAN® SPARTAN® CSU
TROJAN® WB
TROJAN® SHIELD™

1.2 Relevant Identified uses of the Substance or Mixture and uses Advised Against
No further relevant information available.

Application of the Substance / the Mixture
Explosive product.
Commercial blasting applications.

1.3. Emergency Telephone Number

CHEMTREC	**1-800-424-9300**	**(US/Canada)**
	+01 703-527-3887	**(International)**

SECTION 2 – HAZARD(S) IDENTIFICATION

2.1 Classification of the Substance or Mixture
Classification According to Regulation (EC) No 1272/2008
Classifications listed also are applicable to the OSHA GHS Hazard Communication Standard (29CFR1910.1200).

exploding bomb

Expl. 1.1 H201 Explosive; mass explosion hazard.

Classification According to Directive 67/548/EEC or Directive 1999/45/EC


E; Explosive

R2: Risk of explosion by shock, friction, fire or other sources of ignition.

Information Concerning Particular Hazards for Human and Environment: The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Classification System: The classification is according to the latest editions of the EU-lists and extended by company and literature data.
The classification is in accordance with the latest editions of international substances lists and is supplemented by information from technical literature and by information provided by the company.
Additional Information: There are no other hazards not otherwise classified that have been identified.
0 percent of the mixture consists of component(s) of unknown toxicity.

2.2 Label Elements
Labelling According to Regulation (EC) No 1272/2008
The product is additionally classified and labelled according to the Globally Harmonized System within the United States (GHS).
The product is classified and labelled according to the CLP regulation.
Hazard Pictograms


GHS01

Signal Word	: Danger
Hazard-determining components of labelling:	: pentaerythritol tetranitrate (PETN) : octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) : perhydro-1,3,5-trinitro-1,3,5-triazine (RDX) : 2,4,6-trinitrotoluene (TNT) : aluminium powder (pyrophoric)
Hazard statements	: H201 Explosive; mass explosion hazard.
Precautionary Statements	: P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P250 - Do not subject to grinding/shock/friction. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P373 - DO NOT fight fire when fire reaches explosives. P370+P380 - In case of fire: Evacuate area. P372 - Explosion risk in case of fire. P401 - Store in accordance with local/regional/national/international regulations. P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard Description	
WHMIS-Symbols	: Explosive products are not classified under WHMIS.
NFPA Ratings (scale 0 - 4)	: Not available.
HMIS-Ratings (scale 0 - 4)	: Not available.

HMIS Long Term Health Hazard Substances
None of the ingredients are listed.
2.3 Other Hazards
Results of PBT and vPvB Assessment
PBT : Not applicable.
vPvB : Not applicable.
Explosive Product Notice: PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.
WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Dangerous components:	
CAS: 78-11-5 EINECS: 201-084-3 Index number: 603-035-00-5	pentaerythritol tetranitrate (PETN) E R3
	Unst. Expl., H200
CAS: 118-96-7 EINECS: 204-289-6 Index number: 609-008-00-4	2,4,6-trinitrotoluene (TNT) T R23/24/25; E R2; N R51/53 R33
	Expl. 1.1, H201 Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331 STOT RE 2, H373 Aquatic Chronic 2, H411
CAS: 7429-90-5	aluminum metal F R15
	Water-react. 1, H260
CAS: 121-82-4 EINECS: 204-500-1	perhydro-1,3,5-trinitro-1,3,5-triazine (RDX) T R25; E R2
	Expl. 1.1, H201 Acute Tox. 3, H301
CAS: 2691-41-0 EINECS: 220-260-0	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) T R24; Xn R22; E R2
	Expl. 1.1, H201 Acute Tox. 3, H301; Acute Tox. 3, H311

Additional Information: For the wording of the listed risk phrases refer to section 16.
For the listed ingredients, the identity and exact percentages are being withheld as a trade secret.

SECTION 4 – FIRST AID MEASURES

4.1 Description of First Aid Measures
General Information: No special measures required.
After Inhalation: Supply fresh air; consult doctor in case of complaints.
After Skin Contact: Generally the product does not irritate the skin.
Wash with soap and water.
If skin irritation is experienced, consult a doctor.
After Eye Contact: Remove contact lenses if worn.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After Swallowing: Do not induce vomiting; call for medical help immediately.
4.2 Most Important Symptoms and Effects, Both Acute and Delayed
Blast injury if mishandled.
Hazards: Danger of blast or crush-type injuries.
4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed
Product may produce physical injury if mishandled. Treatment of these injuries should be based on the blast and compression effects.

SECTION 5 – FIRE-FIGHTING MEASURES

5.1 Extinguishing Media
Suitable Extinguishing Agents: DO NOT fight fire when fire reaches explosives.
For Safety Reasons Unsuitable Extinguishing Agents: None.
5.2 Special Hazards Arising from the Substance or Mixture
DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors. It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.
Explosive; mass explosion hazard.
5.3 Advice for Firefighters
Protective Equipment: Wear self-contained respiratory protective device.
Wear fully protective suit.
Additional Information
Eliminate all ignition sources if safe to do so. Flammability Classification: (defined by 29 CFR 1910.1200) Explosive. Can explode under fire conditions. Individual devices will randomly explode. Mass explosion of multiple devices is possible under certain conditions. Burning material may produce toxic and irritating vapors. In unusual cases, shrapnel may be thrown from exploding devices under containment. See 2012 Emergency response Guidebook for further information.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures
Evacuate area.
Wear protective clothing.
Ensure adequate ventilation.
Keep away from ignition sources.
Protect from heat.
Isolate area and prevent access.
6.2 Environmental Precautions
No special measures required.
6.3 Methods and Material for Containment and Cleaning Up
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose unusable material as waste according to item 13.

6.4 Reference to Other Sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7 – HANDLING AND STORAGE

7.1 Precautions for Safe Handling
Open and handle receptacle with care.
Handle with care. Avoid jolting, friction and impact.
Use only in well ventilated areas.
Do not subject to grinding/shock/friction.
Information About Fire - and Explosion Protection: Keep ignition sources away - Do not smoke. Protect from heat. Prevent impact and friction. Emergency cooling must be available in case of nearby fire.
7.2 Conditions for Safe Storage, Including Any Incompatibilities Storage:
Requirements to be Met by Storerooms and Receptacles: Store in a cool location.
Avoid storage near extreme heat, ignition sources or open flame.
Information About Storage in One Common Storage Facility: Store away from foodstuffs.
Store away from oxidising agents.

Further Information About Storage Conditions: Store under lock and key and with access restricted to technical experts or their assistants only.
Keep away from heat.
7.3 Specific End Use(s): No further relevant information available.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional Information About Design of Technical Facilities: No further data; see item 7.

8.1 Control Parameters

Ingredients with Limit Values that Require Monitoring at the Workplace:	
118-96-7 2,4,6-trinitrotoluene (TNT)	
PEL (USA)	Long-term value: 1,5 mg/m³ Skin
REL (USA)	Long-term value: 0,5 mg/m³ Skin
TLV (USA)	Long-term value: 0,1 mg/m³ Skin; BEI-M
EL (Canada)	Long-term value: 0,1 mg/m³ Skin
EV (Canada)	Short-term value: 0,2 mg/m³, 0,02 ppm Long-term value: 0,1 mg/m³, 0,01 ppm Skin
7429-90-5 aluminum metal	
PEL (USA)	Long-term value: 15*; 15** mg/m³ *Total dust; ** Respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ as Al*Total dust**Respirable/pyro powd./welding f.
TLV (USA)	Long-term value: 1* mg/m³ as Al; *as respirable fraction
EL (Canada)	Long-term value: 1,0 mg/m³ respirable, as Al

EV (Canada)	Long-term value: 5 mg/m³ aluminium-containing (as aluminium)
121-82-4 perhydro-1,3,5-trinitro-1,3,5-triazine (RDX)	
REL (USA)	Short-term value: 3 mg/m³ Long-term value: 1,5 mg/m³ Skin
TLV (USA)	Long-term value: 0,5 mg/m³ Skin
EL (Canada)	Long-term value: 0,5 mg/m³ Skin
EV (Canada)	Long-term value: 0,5 mg/m³ Skin

DNELs: No further relevant information available.
PNECs: No further relevant information available.

Ingredients with biological limit values:	
118-96-7 2,4,6-trinitrotoluene (TNT)	
BEI (USA)	1,5 % of hemoglobin Medium: blood Time: during or end of shift Parameter: Methemoglobin (background, nonspecific, semi-quantitative)

Additional Information: The lists valid during the making were used as basis.

8.2 Exposure Controls
Personal Protective Equipment:
General Protective and Hygienic Measures: The usual precautionary measures are to be adhered to when handling chemicals.
Keep ignition sources away - Do not smoke.
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.
Respiratory Protection: Not required under normal conditions of use.
Respiratory protection may be required after product use.
Protection of Hands: Wear gloves for the protection against mechanical hazards according to NIOSH or EN 388.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
Material of Gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.
Penetration Time of Glove Material: The exact break through time must be found out by the manufacturer of the protective gloves and has to be observed.
Eye Protection:


Safety glasses

Face protection
Body Protection: Impervious protective clothing
Limitation and Supervision of Exposure into the Environment: No further relevant information available.
Risk Management Measures: Organizational measures should be in place for all activities involving this product.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

General Information		
Appearance		
Form	:	Solid material
Colour	:	According to product specification
Odour	:	Odourless
Odour Threshold	:	Not determined.
pH- Value	:	Not applicable.
Change in Condition		
Melting point/Melting range	:	80 °C (176 °F) (trinitrotoluene)
Boiling point/Boiling range	:	Undetermined.
Flash Point	:	Not applicable.
Flammability (solid, gaseous)	:	Explosive; mass explosion hazard.
Auto/Self-ignition temperature	:	Not determined.
Decomposition temperature	:	Not determined.
Self-igniting	:	Product is not self-igniting.
Danger of explosion	:	Risk of explosion by shock, friction, fire or other sources of ignition.
Explosion limits		
Lower	:	Not determined.
Upper	:	Not determined.
Vapour pressure	:	Not applicable.
Density at 20 °C (68 °F)	:	1,55 - 1,65 g/cm³ (12,935 - 13,769 lbs/gal)
Relative density	:	Not determined.
Vapour density	:	Not applicable.
Evaporation rate	:	Not applicable.
Solubility in / Miscibility with water	:	Variable, dependent upon product composition and packaging.
Partition coefficient (n-octanol/water)	:	Not determined.
Viscosity		
Dynamic	:	Not applicable.
Kinematic	:	Not applicable.
9.2 Other Information	:	No further relevant information available.

SECTION 10 – STABILITY AND REACTIVITY

10.1 Reactivity:

10.2 Chemical Stability:

Thermal Decomposition / Conditions to be Avoided: No decomposition if used and stored according to specifications. Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

10.3 Possibility of Hazardous Reactions: Danger of explosion. Toxic fumes may be released if heated above the decomposition point.

10.4 Conditions to Avoid: Keep ignition sources away - Do not smoke.

10.5 Incompatible Materials: No further relevant information available.

10.6 Hazardous Decomposition Products: Carbon monoxide and carbon dioxide
Nitrogen oxides Hydrocarbons.

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:
Acute toxicity:
LD/LC50 values relevant for classification: None.
Primary irritant effect:
On the Skin: Not a skin irritant in unused form. Vapors/particles from used product are possibly irritating to skin.
On the Eye: Not an eye irritant in unused form. Vapors/particles from used product are possibly irritating to eyes.
Sensitisation: No sensitising effects known.
Subacute to Chronic Toxicity: No further relevant information available.
Acute Effects (Acute Toxicity, Irritation and Corrosivity): Danger of blast or crush-type injuries.
Repeated Dose Toxicity: No further relevant information available.

SECTION 12 – ECOLOGICAL INFORMATION

12.1 Toxicity
Aquatic Toxicity: Toxic for aquatic organisms
12.2 Persistence and Degradability: No further relevant information available.
12.3 Bioaccumulative Potential: No further relevant information available.
12.4 Mobility in Soil: No further relevant information available.
Ecotoxical effects:
Remark: Toxic for fish
Additional Ecological Information:
General Notes: Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms
Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment cannot be excluded.
12.5 Results of PBT and vPvB Assessment PBT: Not applicable.
vPvB: Not applicable.
12.6 Other Adverse Effects: No further relevant information available.

SECTION 13 – DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:
Recommendation: Must not be disposed together with household garbage. Do not allow product to reach sewage system. Damaged materials pose a danger to anyone in the immediate area; consult experts for disposal of damaged products.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.
Uncleaned Packaging:
Recommendation: Disposal must be made according to official regulations.

SECTION 14 – TRANSPORT INFORMATION

14.1 UN-Number

DOT, ADR, IMDG	:	UN0042
IATA	:	FORBIDDEN

14.2 UN Proper Shipping Name

DOT, IMDG : Boosters, without detonator
ADR : 0042, BOOSTERS, WITHOUT DETONATOR
IATA : FORBIDDEN

14.3 Transport Hazard Class(es)

DOT, ADR, IMDG
Class : 1.1
Label : 1.1D

IATA
Class : FORBIDDEN

14.4 Packing Group

DOT, ADR, IMDG : II
IATA : FORBIDDEN

14.5 Environmental Hazards:

Marine Pollutant: : No
Special Marking (IATA): : Prohibited from Transport in Passenger Aircraft.

14.6 Special Precautions for User: Not applicable.

EMS Number: : F-B,S-X

14.7 Transport in Bulk According to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

Transport/Additional information:

ADR
Limited quantities (LQ) : 0
Excepted quantities (EQ) Code: E0
Not permitted as Excepted Quantity
Tunnel restriction code 1

IMDG
Limited Quantities (LQ) : 0
Excepted Quantities (EQ) : Code: E0
Not permitted as Excepted Quantity

IATA : FORBIDDEN.
UN "Model Regulation" : UN0042, BOOSTERS, WITHOUT DETONATOR, 1.1D, II

SECTION 15 – REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture
United States (USA)

SARA
Section 355 (Extremely Hazardous Substances)
None of the ingredients are listed.
Section 313 (Specific Toxic Chemical Listings)
7429-90-5 aluminum metal
TSCA (Toxic Substances Control Act)
All ingredients are listed.
Proposition 65 (California)
Chemicals known to cause cancer
118-96-7 2,4,6-trinitrotoluene (TNT)
Chemicals known to cause reproductive toxicity for females
None of the ingredients are listed.
Chemicals known to cause reproductive toxicity for males

None of the ingredients are listed.		
Chemicals known to cause developmental toxicity		
None of the ingredients are listed.		
Carcinogenic Categories		
EPA (Environmental Protection Agency)		
118-96-7 121-82-4 2691-41-0	2,4,6-trinitrotoluene (TNT) perhydro-1,3,5-trinitro-1,3,5-triazine (RDX) octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	C C D
IARC (International Agency for Research on Cancer)		
118-96-7	2,4,6-trinitrotoluene (TNT)	3
TLV (Threshold Limit Value established by ACGIH)		
7429-90-5 121-82-4	aluminum metal perhydro-1,3,5-trinitro-1,3,5-triazine (RDX)	A4 A4
NIOSH-Ca (National Institute for Occupational Safety and Health)		
None of the ingredients are listed.		
Canada **Canadian Domestic Substances List (DSL)**		
All ingredients are listed.		
Canadian Ingredient Disclosure list (limit 0.1%)		
None of the ingredients are listed.		
Canadian Ingredient Disclosure list (limit 1%)		
118-96-7 2,4,6-trinitrotoluene (TNT) 7429-90-5 aluminum metal **Other regulations, limitations and prohibitive regulations** This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.		
Substances of very high concern (SVHC) according to REACH, Article 57		
None of the ingredients are listed.		

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16 – OTHER INFORMATION

Revision Date : 22/05/2015
Other Information :
Relevant Phrases

- H200 Unstable explosives.
- H201 Explosive; mass explosion hazard.
- H260 In contact with water releases flammable gases which may ignite spontaneously.
- H301 Toxic if swallowed.
- H311 Toxic in contact with skin.
- H331 Toxic if inhaled.
- H315 Causes skin irritation.
- H373 May cause damage to organs through prolonged or repeated exposure.
- H411 Toxic to aquatic life with long lasting effects.
- R15 Contact with water liberates extremely flammable gases.
- R2 Risk of explosion by shock, friction, fire or other sources of ignition.
- R22 Harmful if swallowed.

- R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
- R24 Toxic in contact with skin.
- R25 Toxic if swallowed.
- R3 Extreme risk of explosion by shock, friction, fire or other sources of ignition.
- R33 Danger of cumulative effects.
- R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Abbreviations and acronyms:

- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- DOT: US Department of Transportation
- IATA: International Air Transport Association
- GHS: Globally Harmonised System of Classification and Labelling of Chemicals
- ACGIH: American Conference of Governmental Industrial Hygienists
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- NFPA: National Fire Protection Association (USA)
- HMIS: Hazardous Materials Identification System (USA)
- WHMIS: Workplace Hazardous Materials Information System (Canada)
- DNEL: Derived No-Effect Level (REACH)
- PNEC: Predicted No-Effect Concentration (REACH)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- Expl. 1.1: Explosives, Division 1.1
- Unst. Expl.: Explosives, Unstable explosives
- Water-react. 1: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 1
- Acute Tox. 3: Acute toxicity, Hazard Category 3
- STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
- Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2

Sources

SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

Party Responsible for the Preparation of This Document

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Dyno Nobel SDS

TECHNICAL DATA SHEET

PACKAGED EXPLOSIVES

DYNOSPLIT® EX

Small Dia. Detonator Sensitive Continuous Packaged Emulsion

Properties

SDS #1157

Density	(g/cc) Avg	1.10–1.12
Energy[a]	(cal/g) (cal/cc)	775 860
Relative Weight Strength[a]		0.88
Relative Bulk Strength[a,b]		1.19
Velocity[c]	(m/s) (ft/s)	4,700 15,400
Detonation Pressure[c]	(kbars)	65
Gas Volume[a]	(moles/kg)	38
Water Resistance		Excellent
Fume Class		IME1 & NRCan1

a All Dyno Nobel Inc. energy and gas volume values are calculated using PRODET™, the computer code developed by Dyno Nobel Inc. for its exclusive use. Other computer codes may give different values.
b ANFO = 1.00 @ 0.82 g/cc
c Unconfined @ 32 mm (1¼ in) diameter; emulsion only. Actual VOD of DYNOSPLIT EX is dependent on VOD of detonating cord (~7,000 m/sec).

Hazardous Shipping Description

- Explosive, Blasting, Type E 1.1D UN 0241 II

PRODUCT DESCRIPTION

DYNOSPLIT EX is a detonator sensitive, perchlorate free, packaged emulsion explosive product. It is produced in a continuous cartridge form specifically for both surface and underground perimeter control applications such as presplit and trim blasting. DYNOSPLIT EX is crimped every 400 mm (16 in) and externally traced the entire length with 10 g/m (50 gr/ft) detonating cord. The continuous explosive column provides consistent blast hole pressure along the entire loaded blast hole zone resulting in a uniform tensile shearing effect. DYNOSPLIT EX can be cut to fit the desired load length or spliced to increase the load length.

APPLICATION RECOMMENDATIONS

- DYNOSPLIT EX is recommended for use with minimum #8 strength electric, electronic or nonelectric detonators or the appropriate core load detonating cord.
- When initiating with a detonator, ALWAYS attach the detonator directly to the external, trace detonating cord on the DYNOSPLIT EX packaged emulsion.
- DYNOSPLIT EX will perform in temperatures from -20° to +50°C (-4° to 122°F).
- When internal product temperatures are below -20°C (-4°F), ALWAYS allow adequate product warm-up time. Refer to the Warm-Up Time Chart to determine adequate blast hole residence time after loading.

Product Disclaimer: Please see reverse side.

DYNO® Dyno Nobel

TECHNICAL DATA SHEET

PACKAGED EXPLOSIVES

DYNOSPLIT® EX

Small Dia. Detonator Sensitive Continuous Packaged Emulsion

Properties Cont.

Warm-Up Time Chart

Blast Hole Residence Time (Hours at 7ºC / 45ºF)

Internal Product Temperature Before Loading		25–32 mm (1–1¼ in) Diameter		38–50 mm (1½–2 in) Diameter	
ºC	ºF	Wet	Dry	Wet	Dry
-30	-22	1.0	2.0	2.0	4.0
-40	-40	2.0	5.0	4.0	8.0

TRANSPORTATION, STORAGE AND HANDLING

- DYNOSPLIT EX must be transported, stored, handled and used in conformity with all applicable federal, state, provincial and local laws and regulations.
- Packaged emulsions have a shelf life of one (1) year when stored at temperatures between -18ºC and 38ºC (0ºF and 100ºF). Explosive inventory should be rotated. Use old materials before new materials.
- For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the "Safety Library Publications of the Institute of Makers of Explosives."

Packaging

SAP Mat. #	SAP Description	Size mm x 400	Size in x 16	Weight / Length kg/m	Weight / Length lb/ft	Chubs per Case	Length m	Length ft	Net Explosive Weight* kg	Net Explosive Weight* lb
QG43125037	DYNOSPLIT EX 25mm x 36.5m / 1.0 x 120ft	25	1	0.49	0.33	84	36.5	120	16.8	37.0
QG43132026	DYNOSPLIT EX 32mm x 26m / 1.25 x 86ft	32	1¼	0.83	0.56	60	26.1	86	20.4	45.0
QG43138016	DYNOSPLIT EX 38mm x 16m / 1.5 x 51ft	38	1½	1.21	0.81	36	15.7	51	17.6	39.0
QG43150009	DYNOSPLIT EX 50mm x 8.7m / 2.0 x 28.5ft	50	2	2.37	1.59	20	8.7	28.5	19.3	42.4

Note: All weights are approximate
*Add two pounds for Gross Case Weight

Case and Pallet Information

DYNOSPLIT EX Size	Case Dimensions cm	Case Dimensions in	Cases per Pallet	Pallet Dimension cm	Pallet Dimension in
1 in, 1½ in, & 2 in	44.5 x 36.3 x 20.3	17.5 x 14.3 x 8	42	91 x 109	36 x 43
1¼ in	42.5 x 32.4 x 24.1	16.7 x 12.7 x 9.5	36	91 x 109	36 x 43

ADDITIONAL INFORMATION – Visit **dynonobel.com** for Brochures and Case Studies related to this product.

DYNO® Dyno Nobel

Safety Data Sheet

SECTION 1 – IDENTIFICATION

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800 Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com www.dynonobel.com

SDS #: 1157
Date: 07/20/2020
Supercedes: 11/01/2018

Product Identifier

Product Name: DYNOSPLIT® EX; DYNOSPLIT® RiGHT

Other Means of Identification

Intended Use of the Product

For professional use only.

Emergency Telephone Number

FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Expl. 1.1	H201
Ox. Sol. 3	H272
Skin Irrit. 2	H315
Eye Irrit. 2A	H319
Carc. 1B	H350
Asp. Tox. 1	H304

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :

GHS01 GHS03 GHS07 GHS08

Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) :
H201 - Explosive; mass explosion hazard.
H272 - May intensify fire; oxidizer.
H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H350 - May cause cancer.

Precautionary Statements (GHS-US) :
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from open flames, sparks, heat, hot surfaces. - No smoking.
P220 - Keep/Store away from combustible material, oxidizable materials, and incompatible materials.
P221 - Take any precaution to avoid mixing with combustible material, oxidizable materials, and incompatible materials.
P230 - Keep wetted with not less than 30% water.
P240 - Ground/bond container and receiving equipment.
P250 - Do not subject to grinding, friction, shock.
P264 - Wash hands, forearms, and exposed areas thoroughly after handling.

P280 - Wear eye protection, protective clothing, protective gloves.
P301+P310 - If swallowed: Immediately call a poison center or doctor.
P302+P352 - If on skin: Wash with plenty of water.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P321 - Specific treatment (see Section 4 on this SDS).
P331 - Do NOT induce vomiting.
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P370+P378 - In case of fire: Use appropriate media (see section 5) to extinguish.
P370+P380 - In case of fire: Evacuate area.
P372 - Explosion risk in case of fire.
P373 - DO NOT fight fire when fire reaches explosives.
P401 - Store in accordance with in accordance with, local, regional, national, territorial, provincial, and international regulations.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

Other Hazards

Hazards Not Otherwise Classified (HNOC): Not available

Other Hazards: Toxic hepatitis, aplastic anemia, methemoglobinemia, hemolytic anemia, and cataracts have been reported after occupational exposure. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product identifier	% (w/w)	Ingredient Classification (GHS-US)
Ammonium nitrate	(CAS No) 6484-52-2	62 - 72	Ox. Sol. 3, H272 Eye Irrit. 2A, H319
Sodium nitrate	(CAS No) 7631-99-4	10 - 18	Comb. Dust, H232 Ox. Sol. 3, H272 Eye Irrit. 2A, H319
Distillates, petroleum, hydrotreated light naphthenic	(CAS No) 64742-53-6	1 - 10	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Carc. 1B, H350 Asp. Tox. 1, H304
Pentaerythrite tetranitrate	(CAS No) 78-11-5	0.5 - 3	Unst. Expl, H200

Full text of H-phrases: see section 16

SECTION 4 - FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Keep at rest and in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin Contact: Remove contaminated clothing. Gently wash with plenty of soap and water followed by rinsing with water

for at least 15 minutes. Call a POISON CENTER or doctor/physician if you feel unwell. Wash contaminated clothing before reuse.

Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

Ingestion: Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms and Effects Both Acute and Delayed

General: Eye irritation. Causes skin irritation. May cause cancer. Aspiration hazard.

Inhalation: May cause respiratory irritation.

Skin Contact: Redness, pain, swelling, itching, burning, dryness, and dermatitis.

Eye Contact: Redness, pain, swelling, itching, burning, tearing, and blurred vision.

Ingestion: Aspiration into the lungs can occur during ingestion or vomiting and may cause lung injury. Aspiration into the lungs can cause severe pulmonary edema/hemorrhage.

Chronic Symptoms: May cause cancer. May cause the blood disorder Methemoglobinemia, and with over exposure in predisposed individuals may cause: renal problems, cardiac abnormalities, other blood disorders. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5 - FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: DO NOT fight fires involving explosives. Evacuate the area for 1 mile or more if any amount of explosives are involved in a fire. Evacuation is also required if the initial fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire, not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water can be used to cool explosives not involved in the initial fire. For large fires use remotely controlled equipment if available.

Unsuitable Extinguishing Media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smothering this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidizable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Special Hazards Arising from the Substance or Mixture

Fire Hazard: In case of fire involving explosives: Evacuate area. DO NOT fight fires involving explosives. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information. Extreme risk of explosion from shock, friction, fire or other sources of ignition.

Explosion Hazard: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity: Accelerates the rate of burning materials. Oxidizer.

Advice for Firefighters

Precautionary Measures Fire: Evacuate area to a minimum distance of 1 mile or more. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Firefighting Instructions: DO NOT fight fires involving explosives. In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.

Protection During Firefighting: When controlling fire before involvement of explosives, fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear.

Hazardous Combustion Products: Toxic fumes are released. Carbon oxides (CO, CO_2). Nitrogen oxides. Methane. Hydrogen. Hydrogen cyanide.

Reference to Other Sections: Refer to section 9 for flammability properties.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Remove ignition sources. No naked lights. No smoking. Use special care to avoid static electric

charges. Evacuate danger area. Do NOT breathe (dust, vapor, mist, gas).

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate danger area.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Evacuate unnecessary personnel. Stop leak if safe to do so. Eliminate ignition sources. Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters. Hazardous waste due to potential risk of explosion.

Methods and Material for Containment and Cleaning Up

For Containment: Ground equipment electrically. Use only non-sparking tools.

Methods for Cleaning Up: Refer to supplier/manufacturer. Clean up spills immediately and dispose of waste safely. Dispose in a safe manner in accordance with local/national regulations.

Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Avoid dust production. This product is an explosive and should only be used under the supervision of trained and licensed personnel. Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Proper grounding procedures to avoid static electricity should be followed. Protect container from physical shock.

Storage Conditions: Store tightly closed in a dry, cool and well-ventilated place. Store at room temperature, below 100 °F (38 °C). Always avoid open flames and excessive heat exposure. Protect from freezing. In case of electrical storm and possible lightning, locations where lightning could strike and initiate explosions, such as storage areas, must be evacuated to a safe distance. Store in accordance with local, regional, national or international regulation.

Incompatible Materials: Heat sources. Strong acids. Strong bases. Strong oxidizers. Reducing agents.

Storage Temperature: < 30 °C (< 86 °F)

Special Rules on Packaging: Keep only in the original container.

Specific End Use(s) Not available

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

Exposure Controls

Appropriate Engineering Controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure but are not required. Product to be handled under strictly controlled conditions. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Safety glasses.

Materials for Protective Clothing: Not available
Hand Protection: Wear chemically resistant protective gloves.
Eye Protection: Safety glasses. In case of excessive dust production, safety goggles are recommended.
Skin and Body Protection: In case of excessive dust production. Wear suitable protective clothing.
Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	Light pink waxy/greasy material packaged in a continuous string of plastic film cartridges
Odor	:	Not available
Odor Threshold	:	Not available
pH	:	Not available
Evaporation Rate	:	Not available
Melting Point	:	Not available
Freezing Point	:	Not available
Boiling Point	:	Not available
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 20 °C	:	Not available
Relative Density	:	Not available
Specific Gravity	:	1.10 - 1.15
Solubility	:	Water: Product mostly dissolves very slowly over time.
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available
Explosive properties	:	Explosive; mass explosion hazard
Explosion Data – Sensitivity to Mechanical Impact	:	Sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge	:	Static discharge could act as an ignition source.

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: Accelerates the rate of burning materials. Oxidizer.
Chemical Stability: Can explode from impact, heat or friction. PETN explodes at 190 - 210 °C (374 - 410 °F). Stable up to approximately 70 °C (158 °F).
Possibility of Hazardous Reactions: Extreme risk of explosion by shock, friction, fire, impact, heat or other sources of ignition.
Conditions to Avoid: May explode from heat, shock, friction or contamination. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials: Oxidizers. Reducing agents. Potassium hydroxide. Strong acids. Strong bases. Ammonia.
Hazardous Decomposition Products: Carbon oxides (CO, CO_2). Nitrogen oxides. Hydrogen. Hydrogen cyanide. Methane.

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product
Acute Toxicity: Not classified
LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Causes skin irritation.
Serious Eye Damage/Irritation: Causes serious eye irritation.
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Teratogenicity: Not available
Carcinogenicity: May cause cancer.
Specific Target Organ Toxicity (Repeated Exposure): Not classified
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified
Aspiration Hazard: May be fatal if swallowed and enters airways.
Symptoms/Injuries After Inhalation: May cause respiratory irritation.
Symptoms/Injuries After Skin Contact: Redness, pain, swelling, itching, burning, dryness, and dermatitis.
Symptoms/Injuries After Eye Contact: Redness, pain, swelling, itching, burning, tearing, and blurred vision.
Symptoms/Injuries After Ingestion: Aspiration into the lungs can occur during ingestion or vomiting and may cause lung injury. Aspiration into the lungs can cause severe pulmonary edema/hemorrhage.
Chronic Symptoms: May cause cancer. May cause the blood disorder Methemoglobinemia, and with over exposure in predisposed individuals may cause: renal problems, cardiac abnormalities, other blood disorders. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.
Information on Toxicological Effects - Ingredient(s)
LD50 and LC50 Data:

Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h
ATE US (oral)	2,217.00 mg/kg body weight
Sodium nitrate (7631-99-4)	
LD50 Oral Rat	> 2000 mg/kg
Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Ecology - General: Harmful to aquatic life with long lasting effects.

Sodium nitrate (7631-99-4)	
LC50 Fish 1	2000 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
LC 50 Fish 2	994.4 - 1107 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])
Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)	
LC50 Fish 1	> 5000 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia 1	> 1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)
Persistence and Degradability	
Sodium nitrate (7631-99-4)	
Persistence and Degradability	**Readily biodegradable in water.**
Bioaccumulative Potential	
Ammonium nitrate (6484-52-2)	
BCF fish 1	(no bioaccumulation expected)
Log Pow	-3.1 (at 25 °C)
Sodium nitrate (7631-99-4)	
Log Pow	-3.8 (at 25 °C)
Bioaccumulative Potential	Not expected to bioaccumulate.

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Treatment Methods: Consult supplier for specific recommendations.

Waste Disposal Recommendations: Refer to manufacturer/supplier for information on recovery/recycling,Destroy and dispose of in accordance with applicable local, state, provincial, territorial, federal and international regulations. Comply with regulations as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR part 555.

Additional Information: Hazardous waste due to potential risk of explosion.

SECTION 14 - TRANSPORT INFORMATION

In Accordance with DOT

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E
Hazard Class : 1.1D
Identification Number : UN0241
Label Codes : 1.1D

Packing Group : II
ERG Number : 112

In Accordance with IMDG

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E
Hazard Class : 1
Identification Number : UN0241
EmS-No. (Fire) : F-B
EmS-No. (Spillage) : S-X
MFAG Number : 112

In Accordance with IATA

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E
Hazard Class : 1
Label Codes : 1.1D
ERG Code (IATA) : 1L

In Accordance with TDG		
Proper Shipping Name	:	EXPLOSIVE, BLASTING, TYPE E
Packing Group	:	II
Hazard Class	:	1.1D
Identification Number	:	UN0241
Label Codes	:	1.1D

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations

DYNOSPLIT® RiGHT; DYNOSPLIT® EX

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard Sudden release of pressure hazard Fire hazard

Pentaerythrite tetranitrate (78-11-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.

Ammonium nitrate (6484-52-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Sodium nitrate (7631-99-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Ammonium nitrate (6484-52-2)

Sodium nitrate (7631-99-4)

Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)

Pentaerythrite tetranitrate (78-11-5)

RTK - U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term

Ammonium nitrate (6484-52-2)

U.S. - California - Toxic Air Contaminant List (AB 1807, AB 2728)
U.S. - Delaware - Accidental Release Prevention Regulations - Sufficient Quantities
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2
U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 2
RTK - U.S. - Massachusetts - Right To Know List
RTK - U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New Jersey - Special Health Hazards Substances List
RTK - U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
RTK - U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term

Sodium nitrate (7631-99-4)

RTK - U.S. - Massachusetts - Right To Know List

RTK - U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Texas - Effects Screening Levels - Long Term U.S. - Texas - Effects Screening Levels - Short Term
Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)
RTK - U.S. - Massachusetts - Right To Know List U.S. - Texas - Effects Screening Levels - Long Term U.S. - Texas - Effects Screening Levels - Short Term
Pentaerythrite tetranitrate (78-11-5)
U.S. - New Jersey - Right to Know Hazardous Substance List
Ammonium nitrate (6484-52-2)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List
Sodium nitrate (7631-99-4)
U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) List
Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)
U.S. - Massachusetts - Right To Know List
Canadian Regulations
DYNOSPLIT® RiGHT; DYNOSPLIT® EX

WHMIS Classification	**Note: Explosives are not regulated under WHMIS. They are subject to the regulations of the Explosives Act of Canada.** Class D Division 1 Subdivision B - Toxic material causing immediate and serious toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects Class F - Dangerously Reactive Material Class C - Oxidizing Material

Pentaerythrite tetranitrate (78-11-5)
Listed on the Canadian DSL (Domestic Substances List)
Ammonium nitrate (6484-52-2)
Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects

Sodium nitrate (7631-99-4)
Listed on the Canadian DSL (Domestic Substances List) Listed on the Canadian IDL (Ingredient Disclosure List)
IDL Concentration 1 %

WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects

Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)
Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 07/20/2020

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Asp. Tox. 1	Aspiration hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Comb. Dust	Combustible Dust
Expl. 1.1	Explosive Category 1.1
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Ox. Sol. 3	Oxidizing solids Category 3
Skin Irrit. 2	Skin corrosion/irritation Category 2
Unst. Expl	Unstable explosives
H200	Unstable explosives
H201	Explosive; mass explosion hazard
H232	May form combustible dust concentrations in air
H272	May intensify fire; oxidizer
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H319	Causes serious eye irritation
H350	May cause cancer

Party Responsible for the Preparation of This Document

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800

Disclaimer

Dyno Nobel SDS

DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO COMPLY
MAINE CONSTRUCTION GENERAL PERMIT

APPLICANT INFORMATION (Owner)		AGENT INFORMATION (If Applying on Behalf of Owner)	
Name:		Name:	
Mailing Address:		Mailing Address:	
Mailing Address:		Mailing Address:	
Town/State/Zip:		Town/State/Zip:	
Daytime Phone #:	Ext:	Daytime Phone #:	Ext:
Email Address:		Email Address:	

PROJECT INFORMATION

Project Town:		UTM Northing & Easting (if known):		Tax Map and Lot Number:			
Size of disturbed area proposed:		Part of a larger project?	❑ Yes ❑ No	Creating a common plan of development or sale?	❑ Yes ❑ No	After the Fact?	❑ Yes ❑ No
Name of waterbody(ies) to which disturbed area would drain (or municipality if area drains to MS4):				Does the site drain to an Impaired Waterbody? If so, provide name:			
Brief Project Description:							
Project Location & Brief Directions to Site:							

NOTICE OF INTENT (NOI) FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS AND FEE

I am filing notice of my intent to carry out work that meets the requirements of the Construction General Permit (effective July 21, 2006). I have a copy of the Construction General Permit and have read and will comply with all of the standards. I have attached all the required submittals.

- ❑ ***Attach*** a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.
- ❑ ***Attach*** a drawing or site plan of the proposed activity.
- ❑ ***Attach*** an erosion and sedimentation control (ESC) plan.
- ❑ ***Attach*** photos of the project site that show existing character and topography of the area proposed for development.
- ❑ ***Attach*** if this form is not being signed by the property owner or lessee, documentation showing authorization to sign.
- ❑ ***Attach*** if any construction activity will occur in essential habitat, written approval from the Dept. of Inland Fisheries & Wildlife.
- ❑ ***Attach*** if the applicant is a corporation, LLC, or other legal entity, proof of legal name. Provide a copy of Secretary of State's *registration information* (available at http://icrs.informe.org/nei-sos-icrs/ICRS?MainPage=x). Individuals and municipalities are not required to provide any proof of identity.

FEE: Pay by credit card at the **Payment Portal**. The MCGP fee may be found here https://www.maine.gov/dep/feeschedule.pdf.

❑ ***Attach*** payment confirmation from the Payment Portal when filing this notification form.

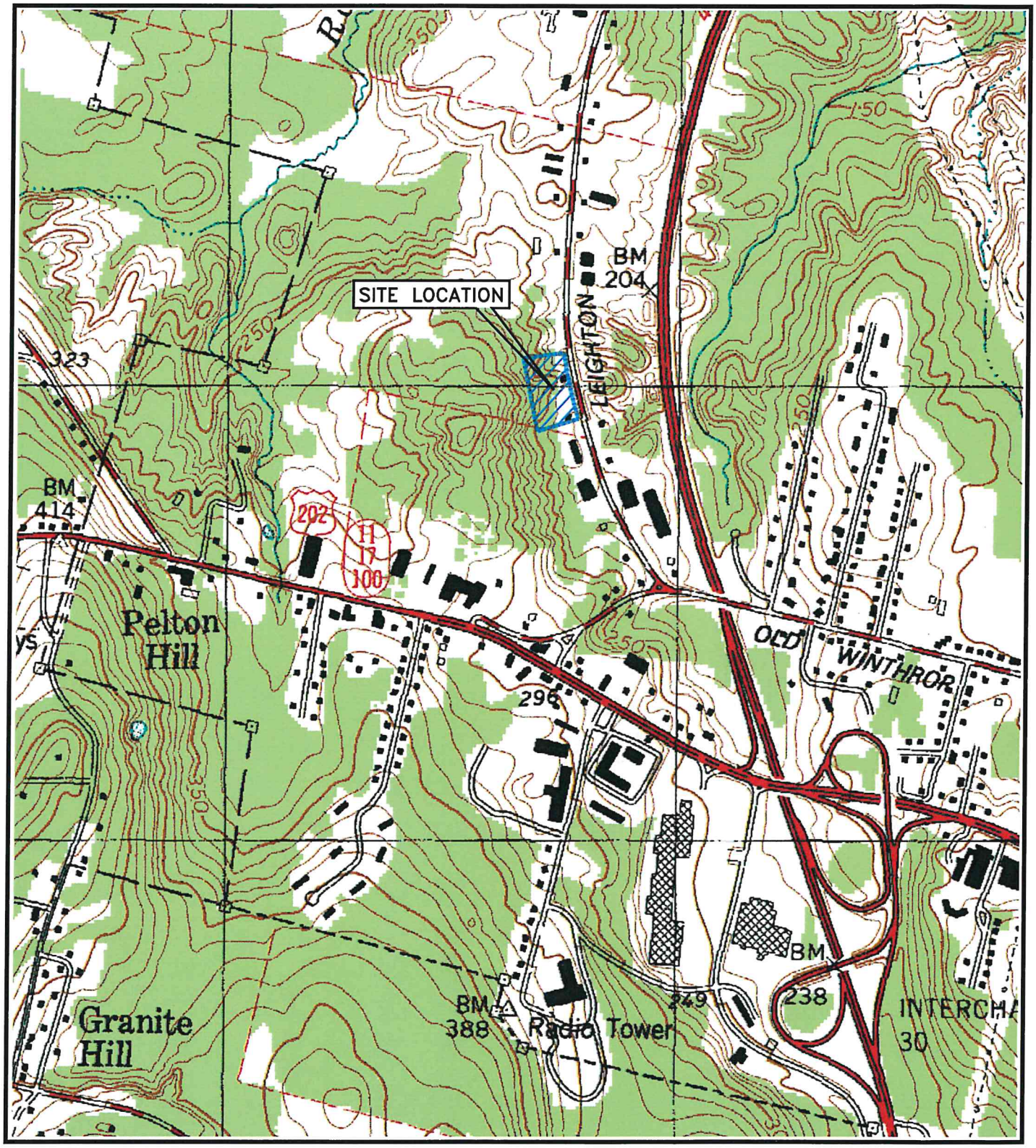
Signature & Certification:

- I authorize staff of the Departments of Environmental Protection to access the project site for the purpose of determining compliance with the Construction General Permit**.**
- I understand coverage under the Construction General Permit becomes effective 14 calendar days after receipt by the Department of this completed form, the required submissions, and fee, *unless the Department approves or denies the NOI prior to that date.*

By signing this Notice of Intent, I represent that the project meets all the requirements for coverage under the Construction General Permit and that the project will be completed in compliance with the Construction General Permit. I also represent that the applicant has sufficient title, right, or interest in the property where the construction activity will place.

Signature of Applicant or Agent (may be typed):		**Date:**	

***Keep a copy as a record of permit*.** Email this completed form with attachments to DEP at: DEP.PBRNotification@maine.gov. This email account is used to receive PBRs and NOIs. No further authorization will be issued by DEP after receipt of this notice. **Work carried out in violation of the Construction General Permit is subject to enforcement.**

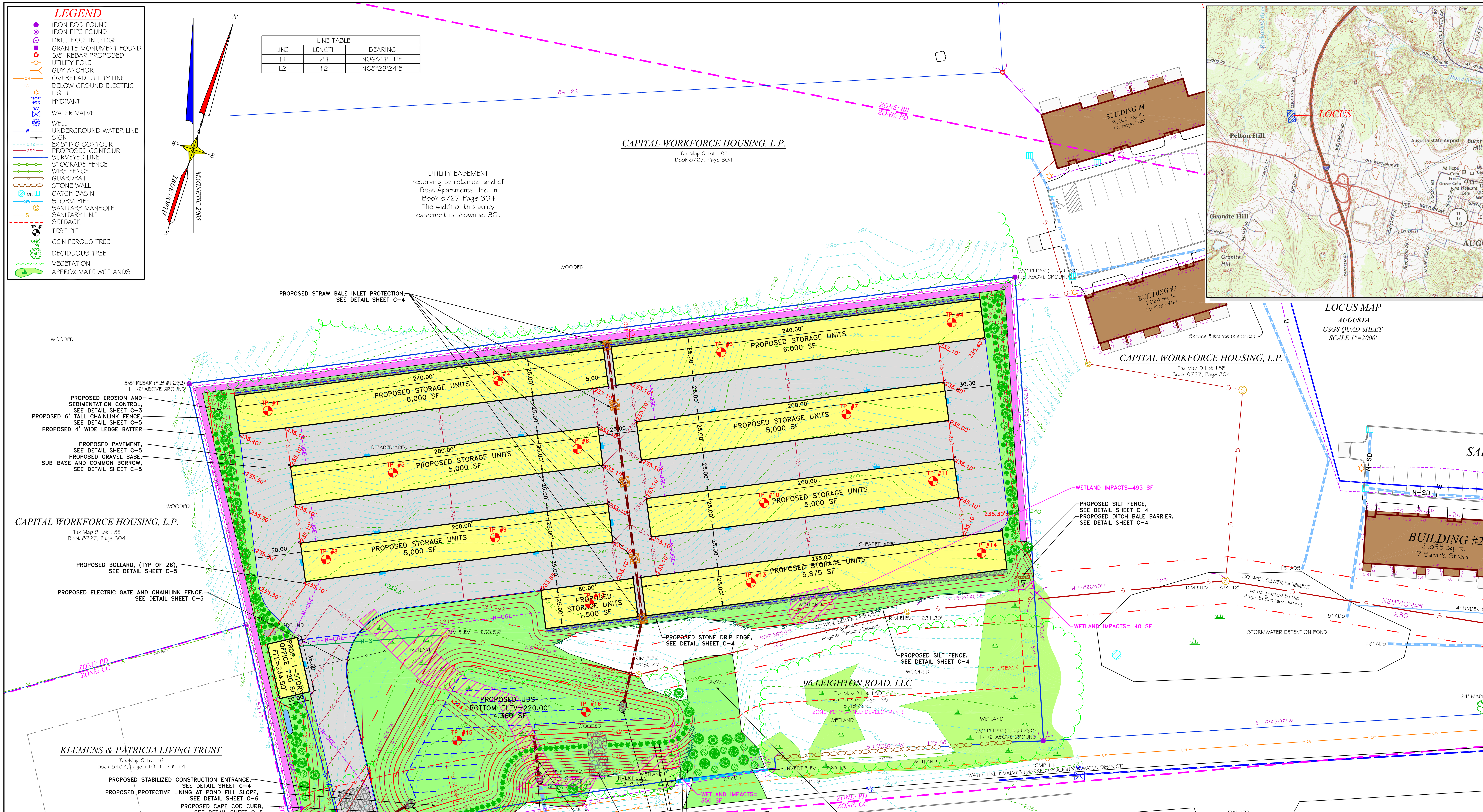


LOCATION MAP

SCALE: 1"=1000'

CLIENT/PROJECT: ERIC JAMES 96 LEIGHTON ROAD, LLC	ENGINEERING E.S. COFFIN SURVEYING © 2022 E.S. COFFIN ENGINEERING & SURVEYING, INC. 432 Civic Road P.O. Box 4687 Augusta, Maine 04330 Ph. (207) 623-9474 Fax (207) 623-0016 Toll Free 1-800-244-9475	SHEET TITLE: SITE LOCATION MAP	PROJ. NO. 2022-093
LOCATION: LEIGHTON ROAD		SCALE: 1" = 1000'	
TOWN: AUGUSTA COUNTY: KENNEBEC STATE: MAINE		DATE: DECEMBER 27, 2022	

SLM



LANDSCAPING NOTES

Plantings per 100':
Buffer Yard "C" 25' Wide
20' with fence
Canopy 5
Understory 4
Decid. Shrub 15
Conif. Shrub 6

LANDSCAPE LEGEND

Required Plantings
for 810 LF of Parking

SYMBOL	COMMON NAME	SIZE	QT'Y.
	CANOPY TREE	2 – 2½" dbH CAL.	41
	UNDERSTORY TREE	1½ – 2" dbH CAL.	33
	DECIDUOUS SHRUB	18"/24" TALL	122
	CONIFEROUS SHRUB	18"/24" TALL	49

GENERAL SITE INFORMATION:

1. OWNER: 96 LEIGHTON ROAD, LLC
   55 WINTHROP STREET
   HALLOWELL, MAINE 04347
2. ZONING: PLANNED DEVELOPMENT DISTRICT (PD)
3. AUGUSTA TAX MAP: MAP 9/LOT 18D
4. TITLE/RIGHT/INTEREST: DEED
   BOOK 14353 PAGE 195
5. LOT SIZE: 3.49 ACRES
6. SETBACKS:
   FRONT: 35'
   SIDE: 10'
   REAR: 10'
7. WETLAND IMPACTS = 3,540 SF
8. DISTURBED AREA = 127,310 SF (2.92 ACRES)
9. IMPERVIOUS AREA:
   EXISTING = 2,480 SF
   PROPOSED = 85,055 SF
   INCREASE = 82,575 SF (1.90 ACRES)

STATE OF MAINE
JAMES E. COFFIN
8500
REGISTERED PROFESSIONAL ENGINEER

E.S. COFFIN ENGINEERING & SURVEYING
© 2021
E.S. COFFIN ENGINEERING & SURVEYING, INC.
432 Cony Road P.O. Box 4687 Augusta, Maine 04330
Ph. (207) 623-9475 Fax (207) 623-0016 Toll Free 1-800-244-9475

NO.	REVISIONS	DATE

SHEET TITLE: SITE PLAN

DRAWN BY: TGH
CHECKED BY: JEC
SCALE: 1 INCH=30 FEET
DATE: JANUARY 16, 2023

CLIENT/PROJECT: ERIC JAMES
96 LEIGHTON ROAD, LLC
LOCATION: LEIGHTON ROAD
TOWN: AUGUSTA COUNTY: KENNEBEC STATE: MAINE

PROJ. NO. 2022-093

C-1

EROSION AND SEDIMENTATION NOTES:

1. CONTRACTOR SHALL FOLLOW BEST MANAGEMENT PRACTICES OF THE KENNEBEC COUNTY SOIL CONSERVATION SERVICE AND THE MAINE DEP BEST MANAGEMENT PRACTICES HANDBOOK.

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES:

EROSION/SEDIMENT CONTROL DEVICES:

THE FOLLOWING EROSION SEDIMENTATION CONTROL DEVICES ARE PROPOSED FOR CONSTRUCTION ON THIS PROJECT. INSTALL THESE DEVICES AS INDICATED ON THE PLANS.

1. SILT FENCE: SILT FENCE WILL BE INSTALLED ALONG THE DOWN GRADING EDGES OF DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL THE SITE IS STABILIZED. IN AREAS WHERE STORMWATER DISCHARGES THE SILT FENCE WILL BE REINFORCED WITH HAY BALES TO HELP MAINTAIN THE INTEGRITY OF THE SILT FENCE AND TO PROVIDE ADDITIONAL TREATMENT.

2. STONE CHECK DAMS: STONE CHECK DAMS ARE TO BE PLACED IN LOW FLOW DRAINAGE SWALES AND PATHS TO TRAP SEDIMENTS AND REDUCE RUNOFF VELOCITIES. DO NOT PLACE STONE CHECK DAMS IN FLOWING WATER OR STREAMS.

3. RIPRAP: PROVIDE RIPRAP IN AREAS WHERE CULVERTS DISCHARGE OR AS SHOWN ON THE PLANS.

4. LOAM, SEED, & MULCH: ALL DISTURBED AREAS, WHICH ARE NOT OTHERWISE TREATED, SHALL RECEIVE PERMANENT SEEDING AND MULCH TO STABILIZE THE DISTURBED AREAS. THE DISTURBED AREAS WILL BE REVEGETATED WITHIN 5 DAYS OF FINAL GRADING. SEEDING REQUIREMENTS ARE PROVIDED ARE THE END OF THIS SPECIFICATION.

5. STRAW AND HAY MULCH: USED TO COVER DENUDED AREA UNTIL PERMANENT SEED OR EROSION CONTROL MEASURES ARE IN PLACE. MULCH BY ITSELF CAN BE USED ON SLOPES LESS THAN 15% IN SUMMER AND 8% IN WINTER. JUTE MESH IS TO BE USED OVER MULCH ONLY. CURLEX II AND EXCELSIOR MAY BE USED IN PLACE OF JUTE MESH OVER MULCH.

6. MULCH NETTING: SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.

TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES:

PROVIDE THE FOLLOWING TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION OF THE DEVELOPMENT:

1. SILTATION FENCE ALONG THE DOWN GRADIENT SIDE OF THE PARKING AREAS AND OF ALL FILL SECTIONS. THE SILTATION FENCE WILL REMAIN IN PLACE UNTIL THE SITE IS 85% REVEGETATED.

2. HAY BALES PLACED AT KEY LOCATIONS TO SUPPLEMENT THE SILT FENCE.

3. PROTECT TEMPORARY STOCKPILES OF STUMPS, GRUBBINGS, OR COMMON EXCAVATION AS FOLLOWS:

   (A) SOIL STOCKPILE SIDE SLOPES SHALL NOT EXCEED 2:1.

   (B) AVOID PLACING TEMPORARY STOCKPILES IN AREA WITH SLOPES OVER 10 PERCENT, OR NEAR DRAINAGE SWALES. SEE ITEM 3 IN CONSTRUCTION PHASE NOTES BELOW.

   (C) THE CONTRACTOR MUST STABILIZE SOIL AND FILL STOCKPILES WITHIN 7 DAYS PRIOR TO ANY RAINFALL.

   (D) SURROUND STOCKPILE SOIL WITH SILTATION FENCE AT BASE OF PILE.

4. ALL DENUDED AREA WHICH HAVE BEEN ROUGH GRADED AND ARE NOTE LOCATED WITHIN THE BUILDING PAD, OR PARKING AND DRIVEWAY SUBBASE AREA SHALL RECEIVE MULCH WITHIN 7 DAYS OF INITIAL DISTURBANCE OF SOIL IN ANY AREA OR WITHIN 7 DAYS AFTER COMPLETING THE ROUGH GRADING OPERATIONS IN ANY AREA, OR PRIOR TO ANY RAINFALL. IN THE EVENT THE CONTRACTOR COMPLETES FINAL GRADING AND INSTALLATION OF LOAM AND SOD WITHIN THE TIME PERIODS PRESENTED ABOVE, INSTALLATION OF MULCH AND NETTING, WHERE APPLICABLE, IS NOT REQUIRED.

5. IF WORK IS CONDUCTED BETWEEN OCTOBER 15 AND APRIL 15, ALL DENUDED AREAS ARE TO BE COVERED WITH HAY MULCH, APPLIED AT TWICE THE NORMAL APPLICATION RATE, AND ANCHORED WITH FABRIC NETTING. THE PERIOD BETWEEN FINAL GRADING AND MULCHING SHALL BE REDUCED TO A 1 DAY MAXIMUM FOR WORK COMPLETED BETWEEN OCTOBER 15TH AND APRIL 15TH.

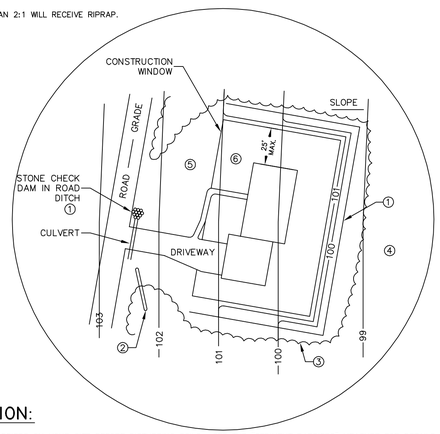
6. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE HAS BEEN STABILIZED OR IN AREAS WHERE PERMANENT EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

PERMANENT EROSION CONTROL MEASURES:

THE FOLLOWING PERMANENT CONTROL MEASURES ARE REQUIRED BY THIS EROSION/ SEDIMENTATION CONTROL PLAN:

1. ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIPRAP, ETC.), WILL BE LOAMED, LIMED, FERTILIZED AND SEEDED. NATIVE TOPSOIL SHALL BE STOCKPILED AND REUSED FOR FINAL RESTORATION WHEN IT IS OF SUFFICIENT QUALITY.

2. SLOPES GREATER THAN 2:1 WILL RECEIVE RIPRAP.



INSTALLATION:

1. INSTALL SEDIMENT BARRIERS ON YOUR SITE BEFORE DISTURBING SOILS. SEE THE "SEDIMENT BARRIERS" MEASURE FOR DETAILS ON INSTALLATION AND MAINTENANCE.

2. CONSTRUCT A DIVERSION DITCH TO KEEP UPSLOPE RUNOFF OUT OF WORK AREA.

3. MARK CLEARING LIMITS ON THE SITE TO KEEP EQUIPMENT OUT OF AREAS WITH STEEP SLOPES, CHANNELIZED FLOW, OR ADJACENT SURFACE WATERS AND WETLANDS.

4. PRESERVE BUFFERS BETWEEN THE WORK AREA AND ANY DOWNSTREAM SURFACE WATERS AND WETLANDS. SEE THE "BUFFERS" MEASURE FOR BUFFER PRESERVATION.

5. USE TEMPORARY MULCH AND RYE-SEED TO PROTECT DISTURBED SOIL OUTSIDE THE ACTIVE CONSTRUCTION AREA. SEE THE "MULCHING" MEASURE AND "VEGETATION" MEASURE FOR DETAILS AND SPECIFICATIONS FOR THESE CONTROLS.

6. PERMANENTLY SEED AREAS NOT TO BE PAVED WITHIN SEVEN DAYS OF COMPLETING FINAL GRADING. SEE "VEGETATION" MEASURE FOR INFORMATION ON PROPER SEEDING.

MAINTENANCE:

EVERY MONTH THE FIRST YEAR AFTER CONSTRUCTION AND YEARLY THEREAFTER, INSPECT FOR AREAS SHOWING EROSION OR POOR VEGETATION GROWTH. FIX THESE PROBLEMS AS SOON AS POSSIBLE. EACH SPRING REMOVE ANY ACCUMULATION OF DEBRIS OR WINTER SAND THAT WOULD IMPEDE RUNOFF FROM ENTERING A BUFFER OR DITCH.

HOUSE SITE - BEST MANAGEMENT PRACTICES

NOT TO SCALE

CONSTRUCTION PHASE:

THE FOLLOWING PRACTICES WILL BE USED TO PREVENT EROSION DURING CONSTRUCTION OF THIS PROJECT.

1. ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION WILL BE CLEARED AND LEFT IN AN UNTREATED OR UNVEGETATED CONDITION. IF FINAL GRADING, LOAMING AND SEEDING WILL NOT OCCUR WITHIN 7 DAYS, SEE ITEM NO. 4.

2. PRIOR TO THE START OF CONSTRUCTION IN A SPECIFIC ARE, SILT FENCING AND/OR HAY BALES WILL BE INSTALLED AT THE TOE OF SLOPE AND IN AREAS AS LOCATED ON THE PLANS T PROTECT AGAINST ANY CONSTRUCTION RELATED EROSION. IMMEDIATELY FOLLOWING CONSTRUCTION OF CULVERTS AND SWALES, RIP RAP APRONS SHALL BE INSTALLED, AS SHOWN ON THE PLANS.

3. TOPSOIL WILL BE STOCKPILED WHEN NECESSARY IN AREAS WHICH HAVE MINIMUM POTENTIAL FOR EROSION AND WILL BE KEPT AS FAR AS POSSIBLE FROM THE EXISTING DRAINAGE COURSE. NO STOCKPILE SHALL BE CLOSER THEN 100' OF A RESOURCE INCLUDING, BUT NOT LIMITED TO, WETLANDS, STREAMS, AND OPEN WATER BODIES. ALL STOCKPILES SHALL HAVE A SILTATION FENCE BELOW THEM REGARDLESS OF TIME OF PRESENCE. ALL STOCKPILES EXPECTED TO REMAIN LONGER THAN 15 DAYS SHALL BE:

   (A) ALL STOCKPILES ANTICIPATED TO REMAIN IN PLACE FOR LESS THAN 30 DAYS SHALL BE TREATED WITH ANCHORED MUCH (WITHIN 5 DAYS OF THE LAST DEPOSIT OF STOCKPILED SOIL), OR PRIOR TO ANY RAINFALL OR COVERED WITH AND ANCHORED TARP WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.

   (B) ALL STOCKPILES ANTICIPATED TO REMAIN IN PLACE LONGER THAN 30 DAYS SHALL BE SEEDED WITH CONSERVATION MIX OF ANNUAL RYE GRASS (0.9 LB/1,000 SQ. FT.) AND MULCHED WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL OR COVERED WITH AN ANCHORED TARP WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.

   (C) INSTALL SILT FENCE AROUND STOCKPILE AT BASE OF PILE, STOCKPILES TO HAVE SILT FENCE INSTALLED AT TIME ESTABLISHMENT AT BASE OF PILE.

4. DISTURBED AREAS:

   (A) DISTURBED AREAS ANTICIPATED REMAINING UNDISTURBED FOR LESS THAN 30 DAYS UNTIL PERMANENTLY STABILIZED SHALL BE TREATED WITH ANCHORED MULCH WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.

   (B) DISTURBED AREAS ANTICIPATED TO REMAIN UNDISTURBED FOR MORE THAN 30 DAYS UNTIL PERMANENTLY STABILIZED SHALL BE TREATED SEEDED WITH CONSERVATION MIX OF ANNUAL RYE GRASS (0.9 LBS/1,000 SQ. FT.) AND MULCHED AT A RATE OF 150 LB. PER 1000 S.F. WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.

5. ALL GRADING WILL BE HELD TO A MAXIMUM 2:1 SLOPE WHERE PRACTICAL. ALL SLOPES WILL BE STABILIZED WITH PERMANENT SEEDING, OR WITH STONE, WITHIN 5 DAYS AFTER FINAL GRADING IS COMPLETE. (SEE POST-CONSTRUCTION REVEGETATION FOR SEEDING SPECIFICATION.) ALL SLOPES HAVING A GRADE GREATER THAN 8% WILL BE STABILIZED WITH RIP RAP OR PERMANENT SEEDING WITHIN 5 DAYS OF COMPLETING THE SLOPES FINAL GRADING.

6. THE CONTRACTOR SHALL WITHIN 24 HOURS OF PLACING A CULVERT PLACE STONE RIP RAP, APRON OR PLUNGE POOL, AT THE CULVERTS OUTLET. ALL CULVERTS WILL BE PROTECTED WITH STONE RIP RAP (D50 = 6" UNLESS OTHERWISE SPECIFIED) AT INLETS AND OUTLETS.

7. ANY DITCH SECTION BROUGHT TO FINAL GRADE WILL BE STABILIZED WITH RIP RAP LINED OR PROPERLY INSTALLED EROSION CONTROL BLANKETS (USED OVER PERMANENT SEEDING) WITHIN 5 DAYS.

POST-CONSTRUCTION REVEGETATION:

THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING.

1. A MINIMUM OF 4" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE, OR STONE WILL BE PLACED ON SLOPES TO STABILIZE SURFACES.

2. IF FINAL GRADING IS REACHED DURING THE NORMAL GROWING SEASON (4/15 TO 9/15), PERMANENT SEEDING WILL BE DONE AS SPECIFIED BELOW. PRIOR TO SEEDING, LIMESTONE SHALL BE APPLIED AT A RATE OF 138 LBS/1,000 SQ. FT. AND 10:20:20 FERTILIZER AT A RATE OF 18.4 LBS/1,000 SQ. FT. WILL BE APPLIED. BROADCAST SEEDING AT THE FOLLOWING RATES:

LAWNS
KENTUCKY BLUEGRASS 0.46 LBS/1,000 S.F.
CREEPING RED FESCUE 0.46 LBS/1,000 S.F.
PERENNIAL RYE GRASS 0.11 LBS/1,000 S.F.

SWALES
RED TOP 0.05 LBS/1,000 S.F.
TALL FESCUE 0.46 LBS/1,000 S.F.

3. AN AREA SHALL BE MULCHED IMMEDIATELY AFTER IS HAS BEEN SEEDED. MULCHING SHALL CONSIST OF HAY MULCH, HYDRO-MULCH, JUTE NET OVER MULCH, PRE-MANUFACTURED EROSION MATS OR ANY SUITABLE SUBSTITUTE DEEMED ACCEPTABLE BY THE DESIGNER.

   (A) HAY MULCH SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE. HAY MULCH SHALL BE SECURED BY EITHER: (NOTE: SOIL SHALL NOT BE VISIBLE)

      1. BEING DRIVEN OVER BY TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.

      2. BLANKETED BY TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING, OR WITH SPRAY, ON GRADES GREATER THAN 5%

      3. SEE NOTE 6, GENERAL NOTES, AND NOTE 8, WINTER CONSTRUCTION.

   B. HYDRO-MULCH SHALL CONSIST OF A MIXTURE OF EITHER ASPHALT, WOOD FIBER OR PAPER FIBER AND WATER SPRAYED OVER A SEEDED AREA. HYDRO-MULCH SHALL NOT BE USED BETWEEN 9/15 AND 4/15.

4. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN SEPTEMBER 15 AND APRIL 15. SHOULD SEEDING BE NECESSARY BETWEEN SEPTEMBER 15 AND APRIL 15 THE FOLLOWING PROCEDURE SHALL BE FOLLOWED. ALSO REFER TO NOTE 9 OF WINTER CONSTRUCTION.

   (A) ONLY UNFROZEN LOAM SHALL BE USED.

   (B) LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.

   (C) WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS/1,000 SQ. FT.) SHALL BE ADDED TO THE PREVIOUSLY NOTED AREAS.

   (D) WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.6 LBS/1,000 SQ.FT.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.

   (E) FERTILIZING, SEEDING AND MULCHING SHALL BE APPLIED TO LOAM THE DAY THE LOAM IS SPREAD BY MACHINERY.

   (F) ALTERNATIVE HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE.

5. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 85% COVER HAS BEEN ESTABLISHED. THE CONTRACTOR WILL CARRY OUT RESEEDING WITHIN 10 DAYS OF NOTIFICATION BY THE ENGINEER THAT THE EXISTING CATCH IS INADEQUATE.

MONITORING SCHEDULE:

THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO. MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

1. HAY BALE BARRIERS, SILT FENCE, AND STONE CHECK DAMS SHALL BE INSPECTED AND REPAIRED ONCE A WEEK OR IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREA UNDERGOING FINAL GRADING. SHOULD THE HAY BALE BARRIERS PROVE TO BE INEFFECTIVE, THE CONTRACTOR SHALL INSTALL SILT FENCE BEHIND THE HAY BALES.

2. VISUALLY INSPECT RIP RAP ONCE A WEEK OR AFTER EACH SIGNIFICANT RAINFALL AND REPAIR AS NEEDED. REMOVE SEDIMENT TRAPPED BEHIND THESE DEVICES ONCE IT ATTAINS A DEPTH EQUAL TO 1/2 THE HEIGHT OF THE DAM OR RISER. DISTRIBUTE REMOVED SEDIMENT OFF-SITE OR TO AN AREA UNDERGOING FINAL GRADING.

3. REVEGETATION OF DISTURBED AREAS WITHIN 25' OF DRAINAGE-COURSE/STREAM WILL BE SEEDED WITH THE "MEADOW AREA MIX" AND INSPECTED ON A WEEKLY BASIS OR AFTER EACH SIGNIFICANT RAINFALL AND RESEEDED AS NEEDED. EXPOSED AREAS WILL BE RESEEDED AS NEEDED UNTIL THE AREA HAS OBTAINED 100% GROWTH RATE. PROVIDE PERMANENT RIP RAP FOR SLOPES IN EXCESS OF 3:1 AND WITHIN 25' OF DRAINAGE COURSE.

EROSION CONTROL DURING WINTER CONSTRUCTION:

1. WINTER CONSTRUCTION PRIOR: NOVEMBER 1 THROUGH APRIL 15.

2. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.

3. EXPOSED AREA SHALL BE LIMITED TO THOSE AREAS TO BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. ATE END OF EACH WORK WEEK NO AREAS MAY BE LEFT UNSTABILIZED OVER THE WEEKEND.

4. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, SUCH TAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.

5. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1,000 B.F. (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ANCHORED SUCH TAT SOIL SURFACE IS NOT VISIBLE THROUGH THEY MULCH. NOTE: AN AREA TO BE USED AS A ROAD OR VEHICLE PARKING LOT IS ALSO CONSIDERED STABLE IF SODDED, COVERED WITH COMPACTED GRAVEL SUBBASE OR COMPACTED STRUCTURAL SAND.

6. BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE CONTINUOUSLY GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT UNEXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS EITHER CONDITIONS ALLOW, DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF HAY, SILT FENCE OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS SHOWN ON THE DESIGN DRAWINGS. NOTE: DORMANT SEEDING SHOULD NOT BE ATTEMPTED UNLESS SOIL TEMPERATURE REMAINS ABOVE 50 DEGREES AND DAY TIME TEMPERATURES REMAIN IN THE 30'S.

7. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8% VEGETATED DRAINAGE SWALES SHALL BE LINED WITH EXCELSIOR OR CURLEX.

8. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1 THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.

9. WINTER RYE IS RECOMMENDED FOR STABILIZATION UNTIL OCTOBER 1ST. AFTER OCTOBER 1, WINTER RYE IS NOT EFFECTIVE. AROUND NOVEMBER 15 OR LATER, ONCE TEMPERATURES OF THE AIR AND SOIL PERMIT, DORMANT SEEDING IS EFFECTIVE.

10. IN THE EVENT OF SNOWFALL (FRESH OR CUMULATIVE) GREATER THAN 1 INCH DURING WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM THE AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

GUIDELINES FOR STABILIZING SITES FOR THE WINTER:

1. STANDARD FOR THE TIMELY STABILIZATION OF DITCHES AND CHANNELS. THE CONTRACTOR WILL CONSTRUCT AND STABILIZE ALL STONE-LINED DITCHES AND CHANNELS ON THE SITE BY NOVEMBER 15TH. THE CONTRACTOR WILL CONSTRUCTION AND STABILIZE ALL GRASS-LINED DITCHES AND CHANNELS ON THE SITE BY SEPTEMBER 1ST. IF THE CONTRACTOR FAILS TO STABILIZE A DITCH OR CHANNEL TO BE GRASS-LINED BY SEPTEMBER 1ST, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE DITCH FOR LATE FALL AND WINTER.

   (A) INSTALL A SOD LINING IN THE DITCH: THE CONTRACTOR WILL LINE THE DITCH WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING SOD AT THE BASE OF THE DITCH WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD FROM SLOUGHING DURING FLOW CONDITIONS.

   (B) INSTALL A STONE LINING IN THE DITCH: THE CONTRACTOR WILL LINE THE DITCH WITH STONE RIP RAP BY NOVEMBER 15TH. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE AND LINE THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE CONTRACTOR WILL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING SO AS TO PREVENT THE STONE LINING FORM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES: THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 1. THE DEPARTMENT WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

   (A) STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF WOOD-WASTE COMPOST AS DESCRIBED IN ITEM 3 OF THIS STANDARD OR WITH STONE RIP RAP AS DESCRIBED IN ITEM 4 OF THIS STANDARD.

   (B) STABILIZE THE SLOPE WITH SOD: THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

   (C) STABILIZE THE SLOPE WITH WOOD-WASTE COMPOST: THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD-WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. THE CONTRACTOR WILL NOT USE WOOD-WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H: 1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

   (D) STABILIZE THE SLOPE WITH STONE RIP RAP: THE CONTRACTOR WILL PLACE A LAYER OF STONE RIP RAP ON THE SLOPE BY NOVEMBER 15. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIP RAP.

3. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS: BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON THE SITE. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

   (A) STABILIZE THE SOIL WITH TEMPORARY VEGETATION: BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1,0000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS T COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1, THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER PROTECTION AS DESCRIBED IN ITEM 3 OF THIS STANDARD.

   (B) STABILIZE THE SOIL WITH SOD: THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PRONTO ROOT GROWTH INTO THE DISTURBED SOIL.

   (C) STABILIZE THE SOIL WITH MULCH: BY NOVEMBER 15 THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1,000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH NETTING OR OTHER METHOD TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

SITE INSPECTION AND MAINTENANCE:

1. WEEKLY INSPECTIONS, AS WELL AS ROUTINE INSPECTIONS FOLLOWING RAIN FALLS, SHALL BE CONDUCTED BY GENERAL CONTRACTOR OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES UNTIL FINAL ACCEPTANCE OF THE PROJECT (85% GRASS CATCH). NECESSARY REPAIRS SHALL BE MADE TO CORRECT UNDERMINING OR DETERIORATION. FINAL ACCEPTANCE SHALL INCLUDE A SITE INSPECTION TO VERIFY THE STABILITY OF ALL DISTURBED AREAS AND SLOPES. UNTIL FINAL INSPECTION, ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL IMMEDIATELY BE CLEANED, AND REPAIRED BY THE GENERAL CONTRACTOR AS REQUIRED. DISPOSAL OF ALL TEMPORARY EROSION AND CONTROL DEVICES SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

   IT IS RECOMMENDED THAT THE OWNER HIRE THE SERVICES OF THE DESIGN ENGINEER TO PROVIDE COMPLIANCE INSPECTIONS (DURING ACTIVE CONSTRUCTION) RELATIVE TO IMPLEMENTATION OF THE STORMWATER AND EROSION CONTROL PLANS. SUCH INSPECTIONS SHOULD BE LIMITED TO ONCE A WEEK OR AS NECESSARY AND BE REPORTABLE TO THE OWNER, TOWN AND DEP.

2. SHORT-TERM SEDIMENTATION MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CLEAN OUT ALL SWALES AND STRUCTURES PRIOR TO TURNING PROJECT OVER.

3. LONG-TERM PROVISIONS FOR PERMANENT MAINTENANCE OF ALL EROSION AND SEDIMENTATION CONTROL DEVICES AFTER ACCEPTANCE OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE OWNER, TOWN OR THEIR DESIGNEE.

STATE OF MAINE
JAMES E. COFFIN 8500
REGISTERED PROFESSIONAL ENGINEER

E.S. COFFIN ENGINEERING & SURVEYING
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E.S. COFFIN ENGINEERING & SURVEYING, INC.
432 Cony Road P.O. Box 4687 Augusta, Maine 04330
PH. (207) 623-9475 Fax (207) 623-8616 Toll Free 1-800-244-9475

NO.	REVISIONS	DATE

SHEET TITLE: SITE DETAILS I
SCALE: AS SHOWN
DATE: JANUARY 23, 2023
DRAWN BY: TGH
CHECKED BY: JEC

CLIENT/PROJECT: ERIC JAMES
96 LEIGHTON ROAD, LLC
LOCATION: LEIGHTON ROAD
TOWN: AUGUSTA
COUNTY: KENNEBEC
STATE: MAINE

PROJ. NO. 2022-093

C-3

Prepared by: E.S. Coffin Engineering & Surveying, Inc.

PHOTOGRAPHS

Client Name:	**Project No.**
96 Leighton Road, LLC.	22-093

Photo No. 1

Date: 11/23/2022

Site Location:
96 Leighton Road
Augusta, Maine

Description:
Photo taken from the existing gravel driveway looking west at Leighton Road.

Photo No. 2

Date: 11/23/2022

Site Location:
96 Leighton Road
Augusta, Maine

Description:
Photo taken from the existing gravel driveway looking east at Leighton Road.

Prepared by: E.S. Coffin Engineering & Surveying, Inc.

PHOTOGRAPHS

Client Name:	**Project No.**
96 Leighton Road, LLC.	22-093

Photo No. 3

Date: 11/23/2022

Site Location:
96 Leighton Road
Augusta, Maine

Description:
Photo taken from the existing gravel driveway looking south at Leighton Road.

Photo No. 4

Date: 11/23/2022

Site Location:
96 Leighton Road
Augusta, Maine

Description:
Photo taken from the existing gravel driveway looking esst at the site.

Prepared by: E.S. Coffin Engineering & Surveying, Inc.

PHOTOGRAPHS

Client Name:	**Project No.**
96 Leighton Road, LLC.	22-093

Photo No. 5

Date: 11/23/2022

Site Location:
96 Leighton Road
Augusta, Maine

Description:
Photo taken from the existing gravel driveway looking north at the site.

Photo No. 6

Date: 11/23/2022

Site Location:
96 Leighton Road
Augusta, Maine

Description:
Photo taken from the existing gravel driveway looking west at the site.

Prepared by: E.S. Coffin Engineering & Surveying, Inc.

PHOTOGRAPHS

Client Name:	**Project No.**
96 Leighton Road, LLC.	22-093

Photo No. 7

Date: 11/23/2022

Site Location:
96 Leighton Road
Augusta, Maine

Description:
Photo taken from the existing gravel driveway looking west at a wetland on site.

Photo No. 8

Date: 11/23/2022

Site Location:
96 Leighton Road
Augusta, Maine

Description:
Photo taken from the the south side of Leighton Road looking north at the proposed driveway location.

January 16th, 2023

Mr. James Coffin, PE
E.S. Coffin Engineering & Surveying, LLC.
432 Cony Road
P.O. Box 4687
Augusta, Maine 04330

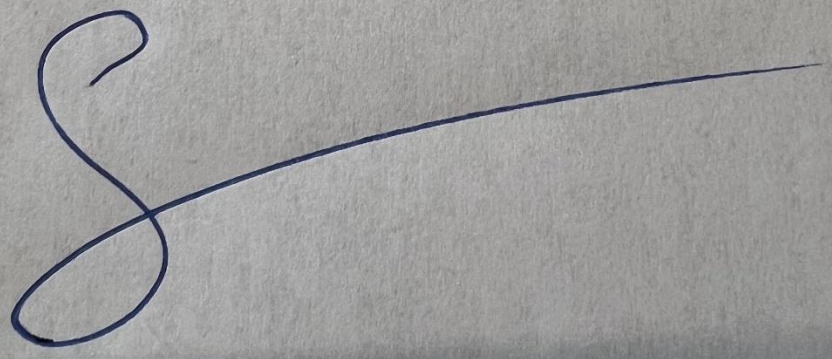
Subject: Agent Authorization
DEP SW & Planning Board Applications

Dear Mr. Coffin

The intent of this letter is to authorize E.S. Coffin Engineering & Surveying, Inc. to act as our agent in submitting applications and answering questions regarding the City of Augusta Planning Board and DEP stormwater permit applications as needed. The applications are for our proposed self-storage project located at 96 Leighton Road in Augusta, Maine.

Sincerely,

Mr. Eric James
Owner 96 Leighton Road, LLC



Jim Coffin

From: noreply@informe.org
Sent: Thursday, January 26, 2023 4:25 PM
Subject: DEP Payment Receipt

Payment Receipt Confirmation

Your payment was successfully processed.

Transaction Summary

Description	Amount
DEP Payment Portal	$129.00
Service Fee	$2.00
Maine.gov Total	$131.00

Customer Information

Customer Name James Coffin
Company Name ES Coffin Engineering & Surveying
Local Reference ID 2621242243
Receipt Date 1/26/2023
Receipt Time 04:25:01 PM EST

Payment Information

Payment Type Credit Card
Credit Card Type VISA
Credit Card Number ******3721
Order ID 65229516
Billing Name James E Coffin

Billing Information

Billing Address 432 Cony Road
Billing City, State Augusta, ME
ZIP/Postal Code 04330
Country US
Phone Number 2076239475
This receipt has been emailed to the address below.
Email Address jcoffin@coffineng.com