Town Highway Garage Evaluation

Prepared for:

Town of New Lisbon , NY

829 County Hwy.16, Garrattsville, NY 13342

July 10, 2012

PREPARED BY

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Town of New Lisbon, County of Otsego

I. INTRODUCTION

This report presents the results of the existing highway garage building evaluation. The evaluation was completed to assess the existing building's structural integrity, energy efficiency, and overall ability to be adapted and/or retrofitted to better suit the current highway department. The evaluation provides professional recommendations, guidance and concerns associated with the existing building condition.

The goal of the Evaluation Report is to provide guidance and recommendations to the Town of New Lisbon so that the future of the facility can be determined. That is, the Town recognizes that the facility will require repairs, upgrades or a possible replacement in order for the Town to continue its highway operations in a cost efficient manner.

II. METHOD OF INVESTIGATION

This Report is based upon a physical inspection of the facility and the knowledge of the on-site inspectors.

Areas inspected and reviewed throughout the existing facility include:

- Facility site (e.g., topography, ease of entrance and exit, drainage, etc.)
- Facility superstructure (e.g., exterior condition, roof condition, building drainage).
- Facility HVAC systems and controls.
- Facility utilities (i.e., septic system, electrical and water services, etc.).
- Space utilization (i.e., equipment storage, organization, work areas, meeting/break areas, entrances and exits, ceiling heights, etc.).
- Possible avenues for expansion or improvements (e.g., building additions).
- Areas for energy efficiency improvements (e.g., insulation additions, penetration sealing, etc.).

III. EXISTING HIGHWAY GARAGE EVALUATION

Overall:
The building appears to be in overall poor condition. Roof and wall systems, although functioning, are overall extensively deteriorated and have extensive discoloration. Extensive energy losses were observed throughout the building; excessive open air penetrations exist and are costing the Town unnecessary expense to heat. Garage area ventilation systems are essentially ineffective and useless. The building, in its current condition, is antiquated and should be updated to at least meet current codes (e.g., insulation upgrades, ventilation upgrades, air leaks, etc.).

Building Integrity and Structure
The building superstructure appears to be structurally sound; structural members do not have any evidence of section loss or deterioration which would reduce their strength. Exterior roof and wall systems are unique in that they act in unison, providing both roof and wall functions. Structurally the roof/wall system appears to be sound, though surface finishes are extensively deteriorated. UV

deterioration is likely the largest contributing factor; the original galvanization finish has met its useful life.

The standard roof ventilation, as provided when constructed, still appears to function. Although still effective, it is, however, a significant energy loss.

The building perimeter walls and foundation systems continue to function as they were originally designed. There do not appear to be any signs of reinforcement failure, settlement or building shifting. Any concrete cracking observed is minimal and non-structural (i.e., shrinkage cracking created during the curing process).

Exterior door systems – both overhead garage doors and mandoors – are loose and severely dated. All of these doors are likely a significant source of heat loss, through both conductance (i.e., surface transfer due to minimal insulation) and transmission of air (i.e., gaps or daylight allowing air movement).

HVAC Systems

The existing forced hot air heating system is antiquated and likely very inefficient. Air distribution throughout the building is non-existent and likely creates uneven heating and excessive run times for the furnace. The furnace itself does appear to be somewhat more modern and in good working order.

Building ventilation systems are excessively small and would not meet current codes for air change requirements. Louvers and fans appear to function, but with limited capacity. We would strongly encourage the Town to make minimum updates to the system in order to make the work environment safe for workers. Additionally, the intake louvers appear to be fixed (i.e., do not open and close); these are likely a significant source of energy loss.

Building penetrations for much of the HVAC equipment are loose, uninsulated and are creating unnecessary energy costs.

Site Deficiencies and Building Services

The existing facility is, spatially, very limited; equipment ingress/egress is achieved through three overhead doors. Possibilities of providing better vehicle/equipment access are very limited based upon the building's overall construction. That is, it is nearly impossible and potentially very expensive to supply additional truck storage and access. Additionally, site restraints, as per the Town, would likely provide another impediment to expansion.

Utilities to the building appear to be functional; the electrical service is adequate and does not have any signs of failure. The water supply from the nearby well appears to be functioning as intended. The septic system – as described by Town employees and nearby residents - does not appear to have the necessary components to even meet the earliest septic system code (i.e., 1988). The system lacks the correct primary and secondary treatment system (e.g., septic tank and leachfield).

Lighting systems are both adequate and functional. Interior lighting is currently fluorescent with open fixtures. The maximum light output is likely 30 footcandles (brightness); modern buildings are generally designed for 50+ footcandles for safety and usability. Exterior lighting is minimal but functional for Town usage. All exterior lights appear to be metal halide, as most standard exterior lights are. Both fluorescent and metal halides (when properly specified) are energy efficient fixtures.

Recommendations

The existing facility is showing signs of future failure (i.e., it is likely that roof components will start to leak, possible septic system failures, etc.). If funding is available the Town should make minimal

repairs to loose fitting doors, open air penetrations, etc. These updates can drastically lower energy costs.

The building still has a short-term usable life, possibly five to ten years, before drastic repairs would be necessary (e.g., mandatory roof replacement). The poor lighting, poor ventilation and difficulty of storing equipment also provides a potential for both equipment damage and workplace injury.

IV. NEW HIGHWAY GARAGE EVALUATION

A new building is an option the Town should consider. New buildings are relatively affordable and substantially more efficient than the Town's current building. Modern advancements in insulation techniques (high density foam), heating systems (radiant heat, modulating and condensing boilers, etc) and overall construction make new construction a strong investment for the future. Costs for materials and services are rising at a yearly rate, making construction costs increase yearly, thus it will likely never be cheaper to construct a new facility.

Through preliminary planning, we have developed two preliminary building layouts for a possible new facility. We would propose a new facility be placed in the exact same location as the existing building; this would potentially reduce costs associated with SEQR review and possible archeological issues. Additionally, it is likely that the disturbance would be less than one acre, eliminating the need for a stormwater collection and treatment system – as required by NYSDEC for any disturbance over one acre. The existing facility would need to be demolished; the reclaimed steel could be recycled and some cost recouped, the existing concrete would be taken to a certified construction debris facility. It is also possible that lead and asbestos materials are present in the existing facility; these would be removed and disposed of according to local & state regulations.

The proposed plan would place the garage doors parallel to the roadway, making the entrance and exits far more efficient. A single overhead door would be provided for each bay- this type of configuration substantially reduces the risk of accidents during the passage of vehicles and equipment, while it also substantially reduces heat loss during the winter months when doors open and close.

The proposed and most cost effective type of construction is a steel superstructure with a sandwich panel wall (e.g., metal panel with rigid foam insulation). This type of building is very energy efficient and can be built to easily exceed current code requirements. The roof can be specified using a white pane, which would reduce the building interior temperatures by as much as 20%, diminishing energy costs for cooling (i.e., fans for ventilation).

A new 95% efficient modulating and condensing boiler would be used with in-slab radiant heat. Radiant heat floors provide heat from the ground up, and warm not only the air, but also the objects within the area. Radiant heat systems are substantially more efficient than conventional forced air systems (such as the current facility uses) due to their construction. Heat is radiated upwards and begins to fade in temperature as it rises; the wasteful warm ceiling heat as found in forced hot air systems is completely eliminated. A typical forced air system heats the ceiling area first (hot air rises) before it transmits downwards. For these reasons radiant heat systems are extremely efficient and effective in Municipal garages such as this.

Standards rooms, very similar to what is existing, would be provided. These would include a mens' room, meeting room, office space (superintendent's office) and a mechanical room- the bare minimum necessary for a fully operational highway department. Six truck bays to house full-size fully dressed trucks would be provided (i.e., a minimum bay depth of 55ft), adequate space between the bays would also be included to provide dead space for smaller basic equipment (e.g., rollers, plate tamps, repair equipment, etc.). Vertical ceiling height would be roughly 22ft, more than enough for a tandem axle truck to raise the bed onto the locks for repairs.

Utilities to the building would likely need to be updated. The existing electrical supply would likely need to be upgraded to a 400-amp service, the existing electrical drop location could be re-used, potentially reducing some upfront costs.

The existing water supply could be employed with a new supply pipe and pressure tank installed in the new facility. The existing septic system would be completely replaced and constructed to meet current codes.

Additional energy options (i.e., renewable energy) could also be further investigated during the design process. Options such as solar, geothermal and heat pumps can easily be integrated into a new facility.

Many benefits exist for a re-use of the existing site. Existing driveways, entrances, electrical drops, site grading, material storage piles etc. are already completed and can continue to be utilized. SEQR review, archeological issues, NYSDEC issues and other government requirements could likely be fully avoided as the site is already disturbed and has been operational by the Town for many years.

Two proposed building plans are provided in the appendices for possible building options.

V. GRANT FUNDING AND FUNDING REVIEW

Delaware Engineering has discussed several different funding options with both the USDA (United States Department of Agriculture) and HUD (Housing and Urban Development). The following options were reviewed:

- HUD – Community Block Development Grant (CBDG).
    - The CBDG program was developed to provide resources to large cities and urban counties to help develop better housing and living environments.
- USDA – Rural Development Loan.
    - These low interest rate loans are typically used to help communities with infrastructure repairs and updates. Delaware has worked successfully with the Town of Andes to finance their new Garage facility through this program.

Mark Blauer, Blauer Associates (phone: (570) 379-2552), a company that specializes in grant writing and funding sources for municipalities, was consulted to review these two options and also any other possible avenues for funding. Mr. Blauer did not think the HUD CBDG program would be a possible source for funding. The CBDG program has tightened up its funding and is not pursuing buildings of this type. The USDA Rural Development Loan was in Mr. Blauer's opinion the only real possible source for funding; unfortunately, no grants are currently available for this project, thereby making the funding obtainable solely as a loan. He did, however also advise, as Delaware Engineering can attest to, that many local funding sources can likely be more competitive than the USDA loan. Also, the USDA RD loan will typically cost the Town more in upfront costs (i.e., grant writing, paperwork, additional engineering services, etc.). Mark Blauer is more than willing to further discuss opportunities with the Town if desired.

V. CONCLUSIONS

Based on our physical inspection of the building we conclude that:

1. The building superstructure is dated and has likely met its useful life. That is, Town forces are working in an environment that is not conducive to safe vehicle storage, maintenance or repairs. Building deterioration has created substantial energy losses which are creating unnecessary costs to the Town. Several areas of the building will require updates if the Town plans to continue using it. Areas requiring repairs and updates are detailed in the attached Table 1.

2. Roadway maintenance equipment has increased in size substantially over the course of time and requires more space. Trucks must be tightly arranged in order to facilitate garage storage and protection from the environment, thus creating hazardous and difficult maneuvers to be completed daily by Town forces. A building addition is very difficult and expensive to complete. The existing facility is in such poor condition that it is implausible and unrealistic to "add on".
3. Repairs to the building are possible and recommended if a new building is not constructed. Areas of repair to consider are the septic system (not code compliant), updated insulation (very inefficient), better sealing to prevent air movement (heat loss), updates to the ventilation system (poor and non-functional), new roof panels (galvanization has failed and will likely start leaking), and lighting upgrades (low light level for safe operation).
4. A realistic time frame for continued operation of the facility is likely 5 to 10 years. This is based on the overall structural integrity of the building and its systems (e.g., roof panels, drainage, etc.). It is likely that substantial repairs will be necessary in the not so distance future (e.g., metal roofing replacement, possible structural member repairs, septic repair, etc.).
5. Funding sources are very limited and the likely best approach for the Town is to seek local funding or a loan through the USDA.

VI. RECOMMENDATIONS

1. If possible, construct a new building in the same location as the existing. A temporary job trailer could be provided so that Town forces could continue operations, undisturbed, while the new building is being constructed.
2. If a new facility is not possible, updates to the existing facility should be made to save on yearly energy costs and prolong the life of the existing building (see Table 1).
3. A table of comparisons (pros and cons) has been included in the appendices (Table 1).
4. Possible costs for repairs of the existing facility and also costs for a new facility are contained in Table 1 in the appendices.
5. Two possible new building plans have been included in the appendices. An existing building layout has been included for reference.

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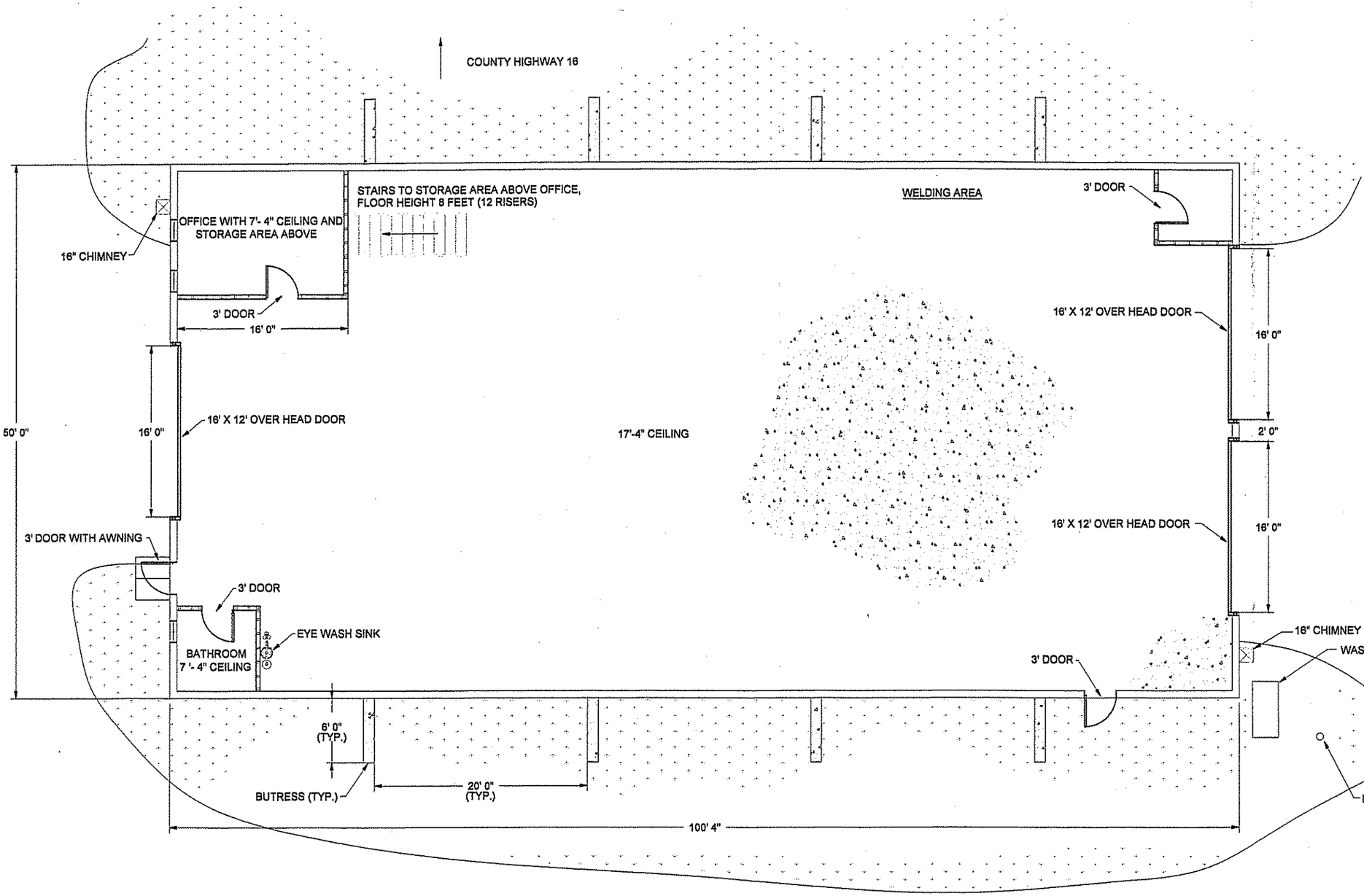
TABLES

Town of New Lisbon
Highway Garage Evaluation
Facility Comparision and Estimated Costs

Table 1

	Existing Facility		New Facility Construction
	Existing	Proposed Upgrade	As Constructed
Building Size	50' x 100	50' x 100	55' x 180'
Building Square Footage	5000	5000	9000
Building Construction	Domed Steel	Domed Steel	Clear Span Steel Superstructure
Building System Finish	Failing Galvanized Finish	New Galvanized Roof	Powder Coated 30+ Year Finish
Earthquake Resistant (Seismic)	No	No	Yes
Fire Resistant Construction	No	No	Yes
Useful Life of Building	5 to 10 years	20 to 30 years	60+ years
Ceiling Height	Restricted - ~17Ft	Restricted - ~17Ft	Unrestricted - 22ft
Truck & Equipment Storage	5 with limited access	5 with limited access	6 with additional space, Easy Access
Garage Doors	3	3	6
Heating System			
- Type	Forced Hot Air	Forced Hot Air	Hydronic Radiant Floor
- Efficiency	Exact Efficiency Unknown	Exact Efficiency Unknown	95%
Insulation System			
- Walls	R-5 (estimated)	Up to R-20	R-22+ continuous
-Ceiling	R-5 (estimated)	Up to R-38	R-38+ continuous
Garage Ventilation System	Poor	Yes - Code Required	Yes - Code Required
Vehicle Exhaust System	No	No	Yes
Compliant Septic System	No	Yes	Yes
Oil Water Separator	No	No	Yes
Fire Alarm System	No	No	Yes
Emergency Exit Systems	No	No	Yes
Electrical System	200 amp	200 amp	400 amp
	Estimated Cost	Estimated Cost	Estimate Cost
Insulation Upgrades			
- Walls	NA	$19,000.00	Included in base cost
-Ceiling	NA	$15,500.00	Included in base cost
New Roof System	NA	$81,000.00	Included in base cost
New Interior Finish (req'd for insulation)	NA	$54,000.00	Included in base cost
New Septic System	NA	$30,000.00	Included in base cost
New Ventilation System	NA	$35,000.00	Included in base cost
Air Transmittance Repairs	NA	$5,000.00	Included in base cost
Lighting Upgrades	NA	$20,000.00	Included in base cost
Total Estimated Project Cost	$0.00	$259,500.00	1.0 to 1.5 million
Estimated Cost per Square Foot		$51.90	$111.00 to $166.00

FIGURES



EXISTING GROUND LEVEL - PLAN

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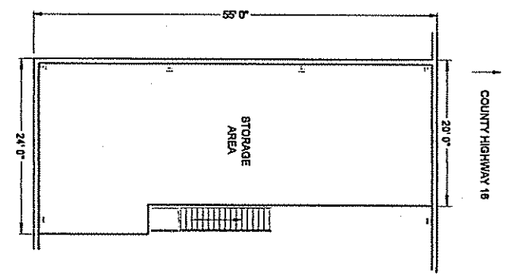
8 1/2 CHESTNUT STREET, SUITE 303, OMEONTA, NY 13820 - 607.432.8973
29 MADISON AVENUE EXTENSION, ALBANY, NY 12203 - 518.453.1200
8 TOWNSEND STREET, WALTON, NY 13856 - 607.865.8230

DESIGNED BY: MEO
REVIEWED BY: DRO

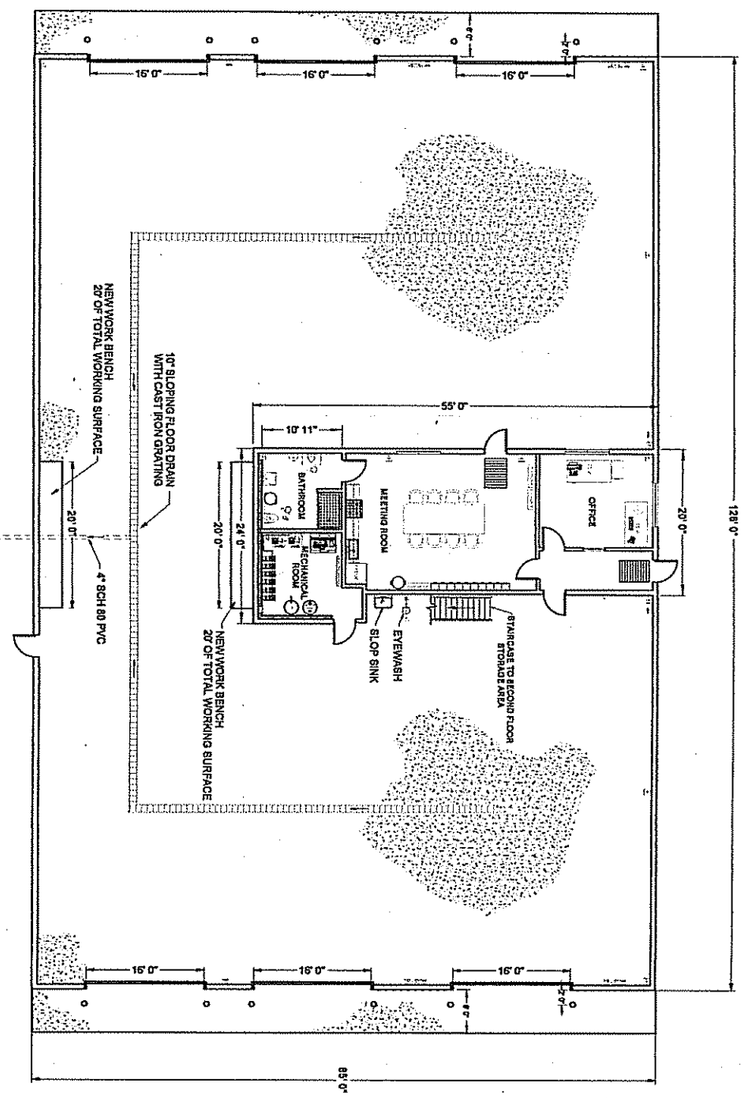
TOWN OF NEW LISBON - HIGHWAY GARAGE PROJECT
EXISTING BUILDING PLAN

SCALE: 1:10
DATE: JULY 09, 2012

PROPOSED SECOND LEVEL - PLAN

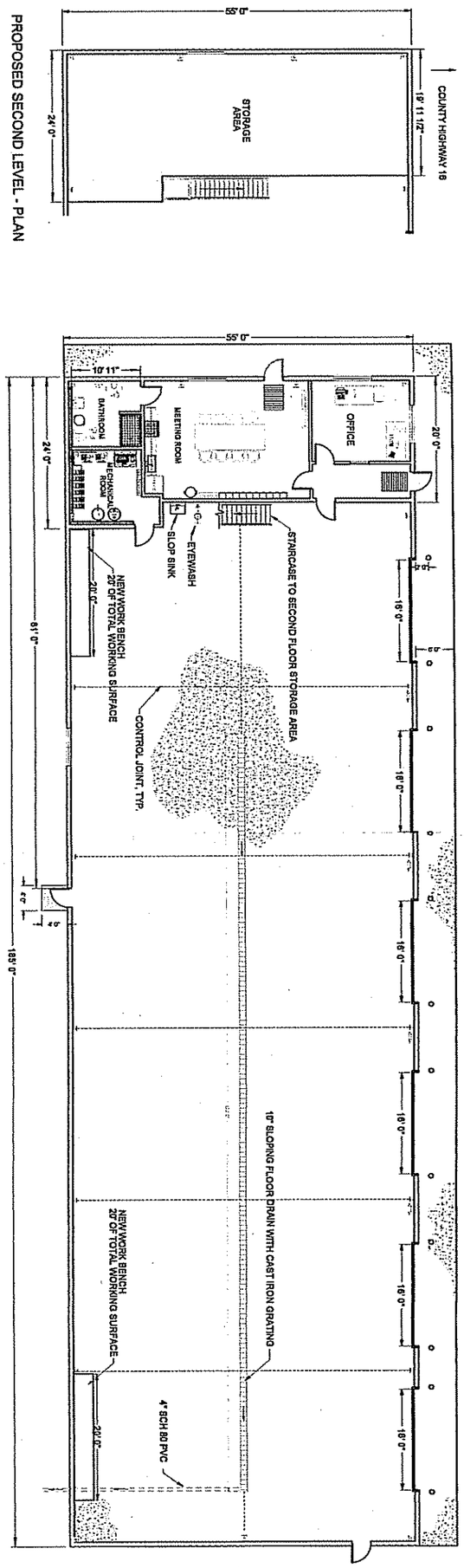


PROPOSED GROUND LEVEL - PLAN



0 20 40 60

SCALE: 1:20 DATE: APRIL 07, 2008	TOWN OF NEW LISBON - HIGHWAY GARAGE PROJECT PROPOSED NEW BUILDING PLAN	DESIGNED BY: MEO REVIEWED BY: DRO	DELAWARE ENGINEERING, P.C. CIVIL AND ENVIRONMENTAL ENGINEERING 8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820 • 607.432.8973 28 MADISON AVENUE EXTENSION, ALBANY, NY 12203 • 518.452.1200 8 TOWNSEND STREET, WALTON, NY 13856 • 607.865.8235



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