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report

Upper Cape Regional Transfer Station Feasibility Study

Upper Cape Regional Transfer Station Board of Directors

Revised January 14, 2016

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EXECUTIVE SUMMARY

Weston & Sampson was retained by the Board of Directors (Board) of the Upper Cape Regional Transfer Station (UCRTS) to evaluate potential re-use options for the site since the facility has been taken out of service at the end of 2014.

Our findings from this study:

- Short term C&D (or residuals) transfer with some processing appears to be the best public or private sector use.
- The site may have long-term value to member towns as a transfer facility, for which it was developed and constructed, and should be maintained.
- In addition to a C&D transfer facility, opportunities exist for potential coexistence with the transfer operations. Potential feasible options include continued use for CDL testing, salt storage, and renewable energy.

Bourne ISWM appears to be best fit to lead this effort for a C&D transfer facility. This appears to be a logical choice as a member town and also given the ISWM facility proximity to the UCRTS.

It is our understanding that Bourne has explored the use of the UCRTS facility as a C&D transfer facility. It is also our understanding that they have had discussions with rail companies and out of state disposal facilities. At this time, there is no final conclusion to their exploration effort. If Bourne cannot lead the effort of a short term C&D transfer facility, an RFP approach should be used to identify private industry potential lessees of the facility. The RFP will help member towns identify actual market conditions and potential revenue streams.

The Intermunicipal Agreement (IMA) includes a final termination clause should the parties decide not to pursue renewal of the agreement (IMA). Should the Board decide to pursue this path, we would recommend that legal counsel review the IMA and the termination clause so that all parties can be clearly informed of the process.

1.0 INTRODUCTION

Weston & Sampson was retained by the Board of Directors (Board) of the Upper Cape Regional Transfer Station (UCRTS) to evaluate potential re-use options for the site. The UCRTS is located on the Otis Air National Guard (ANG) Base (Base) in Sandwich Massachusetts.

The UCRTS Board was formed through an intermunicipal agreement between the Member Towns. Member Towns of the UCRTS are:

1. Town of Bourne
2. Town of Falmouth
3. Town of Mashpee
4. Town of Sandwich

The UCRTS operates under a consent agreement with the Department of the Air Force (Air Force) to "construct, use, maintain, control, operate, and repair" the UCRTS located at the ANG Base. The land is owned by the Commonwealth of Massachusetts who leases the land to the Air Force. It is through these agreements that govern operation of the UCRTS.

The UCRTS is located on an approximate 18.9 acre parcel of land on Otis. The parcel is outside of the restricted area and access is open to users of the facility via Kitridge Road, off of Sandwich Road and Route 151. The site includes a transfer station tipping building with tipping floor and office space, a rail spur, a truck scale, and utilities.

The site is located in a Sole Source Aquifer as shown in Figure 2. Undeveloped portions of the parcel are within the Natural Heritage and Endangered Species Program (NHESP) Priority Habitats of Rare Species, and the area surrounding it is located in the NHESP Estimated Habitats of Rare Wildlife.

The UCRTS was constructed around 1989 to transfer municipal solid waste (MSW) from the upper cape region, via rail, to the SEMASS waste to energy plant in Rochester, Massachusetts. The facility was operated through December 2014 when existing disposal contracts with SEMASS expired. Member towns negotiated disposal contracts independently with disposal facilities, sending MSW to multiple locations and making operation of the transfer station no longer economically feasible due to low throughput volume. The UCRTS closed its operations January 1, 2015 and remains closed as of the date of this report.

This document summarizes the information reviewed and the process completed as our effort to identify potential future use of the UCRTS. Throughout this project, Weston & Sampson has met with the Board of Directors at regularly scheduled public meetings to present our findings and discuss the status of the project.

2.0 DATA COLLECTION AND REVIEW

Weston & Sampson reviewed a number of existing documents that were provided to us under this Project. A partial list of these documents is included below:

1. Cape Rail Correspondence to Catherine Laurent; March 11, 2015
2. Intermunicipal Agreement (IMA) (not signed); 2015
3. Joint Base Cape Cod 2015 Joint Land Use Study Update and Community – Military; October 30, 2013
4. Massachusetts Military Reservation 2011 Ownership and Occupancy; December 13, 2011
5. Cape Cod Commission Evaluation of Future Disposal Alternatives for Municipal Solid Waste, April 2010.
6. Intermunicipal Agreement (not signed); May 16, 2008
7. Massachusetts Coastal Railroad Rail Transportation Contract; December 12, 2007
8. Consent to Cross U.S. Government Leased Area; September 5, 2007
9. Transfer Station Metes and Bounds Description; December 1, 2006
10. MMR Occupancy Map (no date)
11. Draft JLUS Study Area Showing MMR Current Land Use Map, Cape Cod Commission (no date)
12. Permit by Rule, MassDEP; February 14, 1994
13. Construction of Upper Cape Regional Transfer Station, As-built Revisions; October 31, 1989
14. Site Construction Letter of Certification, MassDEP; August 11, 1989
15. Sandwich Board of Health Site Assignment, February 9, 1988
16. Meeting Minutes May 2014 - October 2015

In addition to review of the documents, we also met with and had conference calls with the following individuals to discuss potential future uses of the property, and identify potential limitations to future use of the property (i.e. zoning, future use of surrounding properties, market demand, etc…):

1. Catherine Laurent, Town of Mashpee
2. Raymond Jack, Town of Falmouth
3. Paul Tilton, Town of Sandwich
4. Philip Goddard and Daniel Barrett, Town of Bourne
5. Col. Virginia Doonan, Christopher Segura, and Col. James Lafavor, ANG
6. Patty Daley, Cape Cod Commission
7. Christopher Podgurski, Massachusetts Coastal Railroad
8. Carter Hunt, MassDevelopment
9. Cape Cod Commercial Fishermen's Alliance
10. Bruce Stanas, Republic Industries
11. James Nocella, Waste Management
12. Michael Camara, ABC Disposal
13. Carl Cavossa, Cavossa Disposal
14. Rose Forbes, Joint Base Cape Cod Air Force Civil Engineer Center
15. Mark Dakers and Daniel Connick, Massachusetts Department of Environmental Protection.
16. Bob Rowland, MassDOT / RMV Division

17. John Pearson, Iowa Pacific/Mass Coastal

Our review of existing permits and leases identified the following noteworthy conditions:

- IMA (2015) – *Agreement among the Towns of the UCRTS for the maintenance and operation of a regional municipal services facility.*
  - Draft document had expiration date of June 30, 2018.
  - Allows participating members to withdraw.
  - Includes a final termination clause should the parties decide not to pursue renewal of the agreement (IMA). The termination clause was not immediately clear to use and we would recommend that legal counsel review the IMA and the termination clause so that all parties can be advised clearly of the process should the Board decide to pursue this option.

- Consent No. 07-10 (2007) – *Allows Towns of the UCRTS to construct, use, maintain, control, operate and repair a waste and refuse transfer station.*
  - Operation of the facility shall not conflict with the rights of the Government nor interfere with the operations by the Government.
  - This consent may be terminated for nonuse for a period of two years.
  - There is no agreement between the UCRTS and the Commonwealth for use of the land.

- MassCoastal Contract – *Agreement between MassCoastal and UCRTS for rail haul to SEMASS.*
  - MassCoastal assumes all track and ROS maintenance on Otis Rail Spur between North Falmouth switch and the UCRTS end of track bumping post.
  - Expired upon the expiration of the UCRTS contracts with SEMASS.

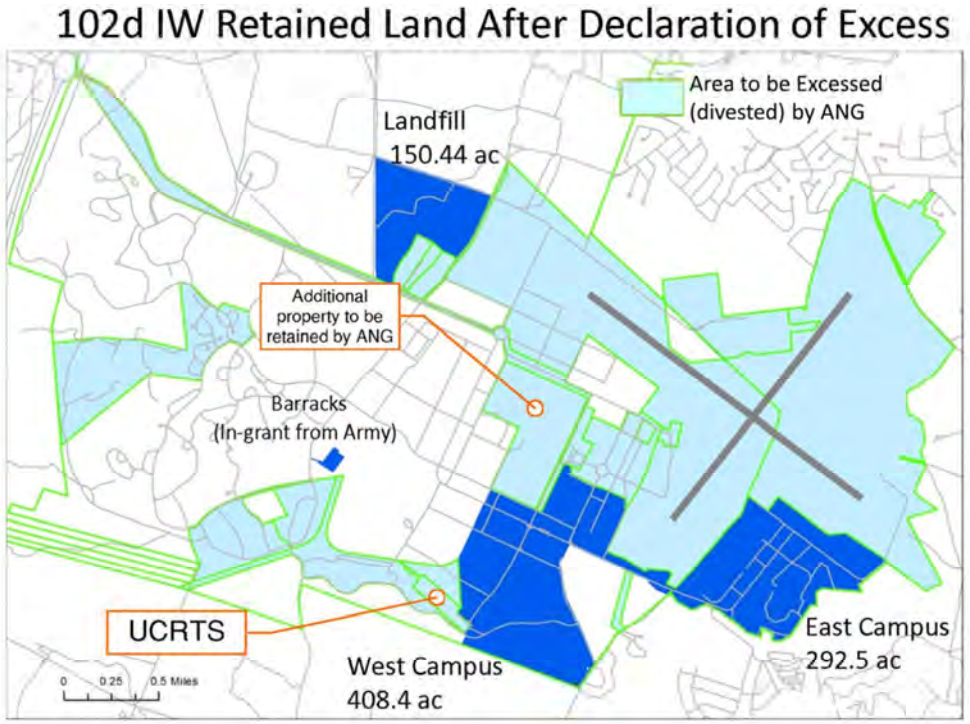
- Site Assignment (1988) – *Designates the land as suitable for the use of solid waste operations.*
  - Granted by the Town of Sandwich Board of Health.

- ATO (1989, 1994) – *Permits the operations of a Municipal Solid Waste transfer station.*
  - Approved for Municipal Solid Waste operations.
  - Permit by Rule approval in 1994.

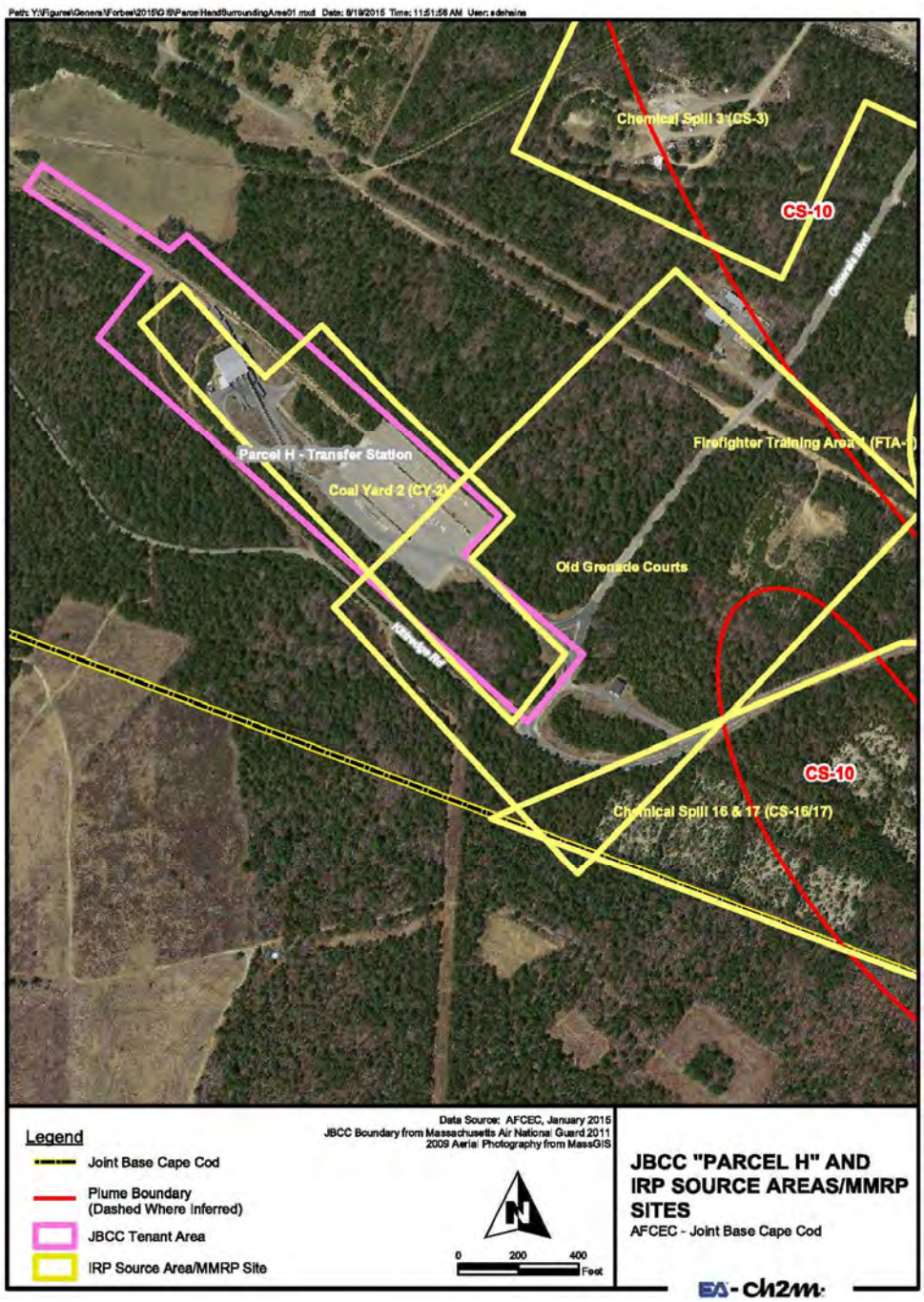
From our review of documents and based on our discussions with key personnel, the following potential additional concerns were identified with respect to alternative uses:

- Security - ANG has stated that they will look for compatible uses with the base. This appears to be consistent with Consent No. 07-10. Non compatible uses may include fuel storage and hazardous material storage.
- Land Ownership Status – The land is owned by the Commonwealth who leases it to the ANG. The ANG allows the Upper Cape Town's to operate the transfer station under a Consent Agreement (Consent No. 07-10). The ANG has filed the necessary paperwork with the Department of Defense to divest themselves from the property, along with other surrounding properties. The date of divestment is uncertain at this time. Once

complete, the divested land may be under the management of MassDevelopment. Uncertainty of future ownership status may create an unfavorable situation for private investors. A Figure showing the areas to be released is presented below and indicates the location of the UCRTS.



- The Army National Guard has filed a request for land that the ANG is looking to divest, including the parcel which contains the UCRTS.
- MassDEP has stated that they will look into the viability of the existing Site Assignment under permitting review if a different operation is proposed.
- The east end of the transfer station property is partially located in former grenade courts. A Site Inspection was completed at the Grenade Courts in the fall of 2015; no grenade-related materials were found. A report is due this spring which will indicate whether the Grenade Courts will need to move forward into a Remedial Investigation/Feasibility Study (RI/FS) based on soil sampling results. The limits of the former grenade courts and where it overlaps the transfer station parcel can be seen in the figure below.



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3.0 SITE INSPECTION

We completed an inspection of the site to assess the feasibility of reuse and valuation of equipment. Since the land where the UCRTS resides is not owned by the member towns, it is considered to have no value to the findings of this study. The inspection was completed with the understanding that either; 1) the site would continue to be used as a waste transfer operation; 2) the site would be a change in use (use to be determined); or 3) the site would be a combination of multiple uses.

The transfer station, scale, and access roads occupy nearly 4 acres on the site. The remaining area consists of approximately 3 acres of open paved area being used for commercial driver's license (CDL) testing and approximately 11.9 acres of wooded area. Unfortunately this wooded area is generally long and narrow, or broken up by the transfer station access road, limiting options to secondary development (shared use) on the site.

Existing utilities servicing the transfer station include:

- An 8-inch water main;
- A sewer line that ties into a septic system located on the site;
- Underground telephone and fire communication lines;
- Underground 120/208 volt, 3-phase electric service with a 225 amp panel; and
- Backup generator service.

Based on our review of the existing site, the building and site is suitable for continued waste handling operations but the building is dated. Some miscellaneous building envelope repairs are warranted and some equipment is past its useful life and, although currently working, replacement may be necessary in the near future if operations are to continue.

Transfer station ancillary equipment reviewed as part of this study is summarized below. It is our understanding that this equipment was operational at the time of the transfer station closure and offers value to the continued operation of the facility.

Truck Scale – The truck scale is estimated to be approximately 25 years old and past its useful life. The load cells of the scale are obsolete. The resale value of the scale is estimated to be $0 by Fairbanks Scale. It is our understanding that the scale was working at the time of the transfer station closure and offers value to the continued

operation of the facility; however replacement may be necessary in the near future if operations are to continue.

Generator – The generator is estimated to be approximately 27 years old (1988), contains a Chevy 350V8 engine. The resale value of the generator is estimated to be $0, although could offer some value as scrap metal. It is our understanding that the generator was working at the time of the transfer station closure and offers value to the continued operation of the facility.

Lidding Crane – The crane in good shape, however is a unique application and is likely worth $0 on resale. Spare parts in storage at the facility may be worth up to $5,000. The resale value and assessment of the equipment was provided by Deshazo Crane. It is our understanding that the crane was working at the time of the transfer station closure and offers value to the continued operation of the facility.

Front End Loader – The front end loader is a 2002 Volvo L120. The original purchase price of the loader was $170,530. The estimated current value is $25,000.

We have also been informed by Massachusetts Coastal Rail that approximately 3 miles of rail outside of the UCRTS are in need of a tie replacement job with joint bolt replacement. There is a MassDOT “project” on “hold” pending findings of this study and who in fact will “own” the right of way and track pending the divestment of the property by ANG.

While the building is unique to solid waste handling operations and top loading rail cars, no alternative uses for the building were identified during this study (refer to Section 4.0). A change in use, a change in occupancy, or building improvements may trigger building upgrades necessary to meet the Massachusetts State Building Code requirements. Potential building upgrades resulting from these triggers include:

- New electric panels
- Energy efficiency compliance
- Structural updates
- Other changes (i.e. egress, HVAC, lighting, etc.)

In summary, the building and the site appears suitable for continued waste transfer operations. Capital improvements may be necessary in the near future for continued operation as a waste transfer station. Building improvements, change in use, or change in occupancy may trigger building upgrades to comply with the Massachusetts Building Code.

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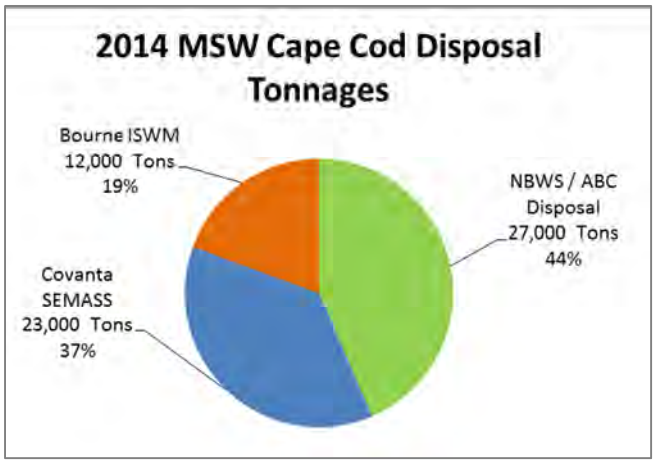
4.0 WASTE PROCESSING, TRANSPORT AND DISPOSAL NEEDS

We reviewed solid waste processing, transportation, and disposal needs for the region. Facilities significant to regional waste handling needs are shown in Appendix E. For the purposes of this study, we reviewed municipal and commercial solid waste, recycling, organic waste, and construction and demolition debris.

4.1 Municipal Solid Waste and Commercial Solid Waste



Cape Cod municipal solid waste (MSW) is under contract until approximately 2025, as towns have contracted for disposal needs after expiration of agreements with SEMASS. There is approximately 67,000 tons of municipal solid waste generated on the Cape Cod annually. Tonnages and disposal locations are shown in the graphic below. While it is difficult to ascertain the volume of waste collected on Cape Cod from commercial accounts, data obtained from the UCRTS suggests commercial waste may be as much as 30% to 40% of the total waste stream, yielding potentially an additional 20,000 tons to 27,000 tons annually. Yarmouth operates a similar transfer station as the UCRTS and transports waste via rail to SEMASS. It is logical that the Yarmouth facility captures most of the solid waste from the outer cape towns destined for SEMASS. It is therefore reasonable to assume that not all of the commercial solid waste on Cape Cod would be transported to the UCRTS should it remain open to such operations. By comparison, the UCRTS has averaged 11,500 TPY of commercial waste during calendar years 2012 to 2014 and this appears to be a more reasonable volume for the Upper Cape region and the throughput available currently at the UCRTS. This is approximately half of what was being accepted at the facility during its operation. Based on the pricing structure for operations, transport and disposal costs, it is not economically feasible to operate and rail haul solid waste at these volumes.

Despite the current market, it is our opinion that the site may have long-term value to member towns as a transfer facility and should be maintained. Member Towns concurred with this assessment during our interviews with them.

4.2 Recycling

Similar to MSW, recyclables appear to be adequately handled on Cape Cod. New Bedford Waste Services (NBWS) is constructing a new single stream recycling processing facility in Rochester, approximately 25 miles from the UCRTS. A processing location accepts recyclables and processes them (separate, and bale or stockpile) for re-sale in the market. Capital investment for this type of facility is generally high. As seen in the graphic above, NBWS controls approximately 40% of the municipal solid waste market on Cape Cod. The new facility is permitted to receive 1,500 tons per day (approximately 450,000 tons per year) of material (MSW, recycling, and C&D).

4.3 Organics Waste

The MassDEP mandated recycling of commercial organic waste implemented in 2014 has created a new market for the handling and processing of organic waste. Commercial organics most commonly are either composted or digested (at an anaerobic digester facility). In the region, a number of facilities are being pursued or are constructed as shown in Appendix E. The Town of Bourne is currently under contract with a private company to site an anaerobic digestion (AD) facility on their landfill property. Additionally, the Town of Plymouth has issued an RFP for similar arrangement at their waste water treatment facility. The proximity of nearby facilities (existing and proposed as seen in Appendix E), and based on the high capital investment coupled with uncertainty of property ownership, is expected to make the feasibility of an AD facility unlikely.

The private compost industry has expressed interest in using the site for compost operations. The capital costs for a compost operation is significantly less than an AD facility, making the feasibility of such a project more likely. Concurrently, Cape Cod towns have expressed a need for a more cost effective means to handling waste water treatment residuals and wastewater treatment plant sludge. The use of this material (sludge and residuals) in a compost operation increases the capital investment and is expected to require a long term contract to make the necessary investment.

The use of the site for composting organic waste, waste water treatment residuals, and wastewater treatment plant sludge appears to be a viable option for future consideration as more waste water treatment plants go on-line in the region and as recycling organic waste increases. This use may be able to operate concurrently with waste transfer operations, although may displace the existing CDL testing area depending on the size of the compost operations. It is anticipated that operation of an organic waste handling facility would be accomplished through a public/private partnership.

4.4 Construction and Demolition Debris or Residuals

There appears to be a need for a Construction and Demolition (C&D) materials (or residuals) transfer facility. Multiple private industry sources have confirmed an interest in operating the UCRTS as a C&D or residual transfer facility. MassDEP has expressed that permitting will require some processing. A full processing facility is likely not feasible due to the large capital cost and the uncertainty with future ownership status.

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5.0 POTENTIAL USES

Building upon our findings presented above, we evaluated potential uses of the site. We also considered alternative uses outside of solid waste operations. To assist with evaluating potential uses, Weston & Sampson retained RKG Associates, Inc. (RKG) to evaluate market conditions as they relate to potential "nonwaste" uses or more traditional industrial uses.

5.1 Solid Waste Operations

From our research with the market place and talking with industry leaders, our takeaways on solid waste market demand for the region is summarized as follows:

1. MSW – With municipal contracts tied up until approximately 2025, discussions with industry representatives indicated that there is not any interest from the private sector in leasing or operating the UCRTS as a waste transfer station facility. This appears consistent with our current understanding of the solid waste market as described in Section 4.0, above.
2. Recycling – Discussions with municipalities and private industry showed minimal interest from the municipal sector and no interest from the private sector in the need for either a recycling transfer or recycling process facility. This appears consistent with our current understanding of the solid waste (and thus recycling) market as described in Section 4.0, above.
3. Organic Waste – There was some private sector interest expressed for operations of an organics compost facility, and some municipal interest expressed in a need for handling WWTP residuals and sludge. The level of complexity (i.e. AD facility or acceptance of WWTP sludge) increases capital cost and increases the terms of a lease agreement. Interest may increase in the future as more waste water treatment plants go on-line in the region and as recycling organic waste increases.
4. C&D (or residuals) – Multiple private industry sources have confirmed an interest in operating the UCRTS as a C&D transfer facility. A full processing facility is likely not feasible due to the large capital cost and the uncertainty with future ownership status.

5.2 Other Market Uses

RKG's evaluation considered potential uses, as allowed by current zoning, is based on supply and demand indicators as well as site and locational characteristics that can influence value such as socio-economic characteristics and real estate market conditions. Key characteristics of the site, its location and adjacent neighborhood were evaluated, and listing and sales data were also collected and reviewed. Based on these indicators and conditions, and based on local resources, the following potential uses for the site:

1. Bulk storage center – Discussions with Massachusetts Coastal Rail suggests that there is a need for an inter-transit bulk storage center; however, RKG is not convinced that there is a need for an inter-transit storage site and questions if it is feasible.
2. Waste transfer facility – This is consistent with Section 5.1 above.
3. Photovoltaic Solar Array
4. Transportation, Storage and/or Waste Related Entities – Interest expressed from a broker; however, specific industry details were not available. This will be evaluated consistent with an inter-transit bulk storage center identified above.

5. Commuter Rail Station, Multi-Modal Facility and Parking – While this may benefit the region, it is outside of the scope of this study and it is unclear how this will directly benefit the UCRTS towns and therefore is not considered further in this study.
6. Salt Storage Facility – In addition to RKG's findings, there has also been expressed interest from private entities on the use of the site as salt storage to supply the Cape Cod region. The Town of Sandwich Zoning Map (May 2013), attached, indicates that the Water Resources Overlay District is near to the property limits. This district prohibits the storage of salt (Sandwich, Article V, Section 5030.). Further confirmation is recommended to verify that the site is not located within this overlay district.

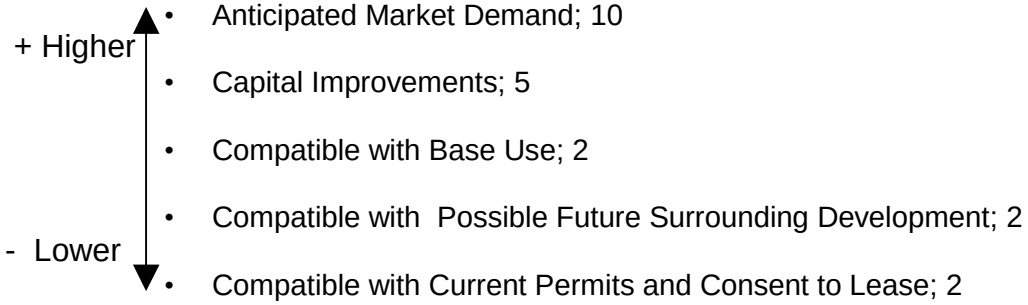
RKG's complete report is attached as Appendix F.

5.3 Evaluation of Potential Uses

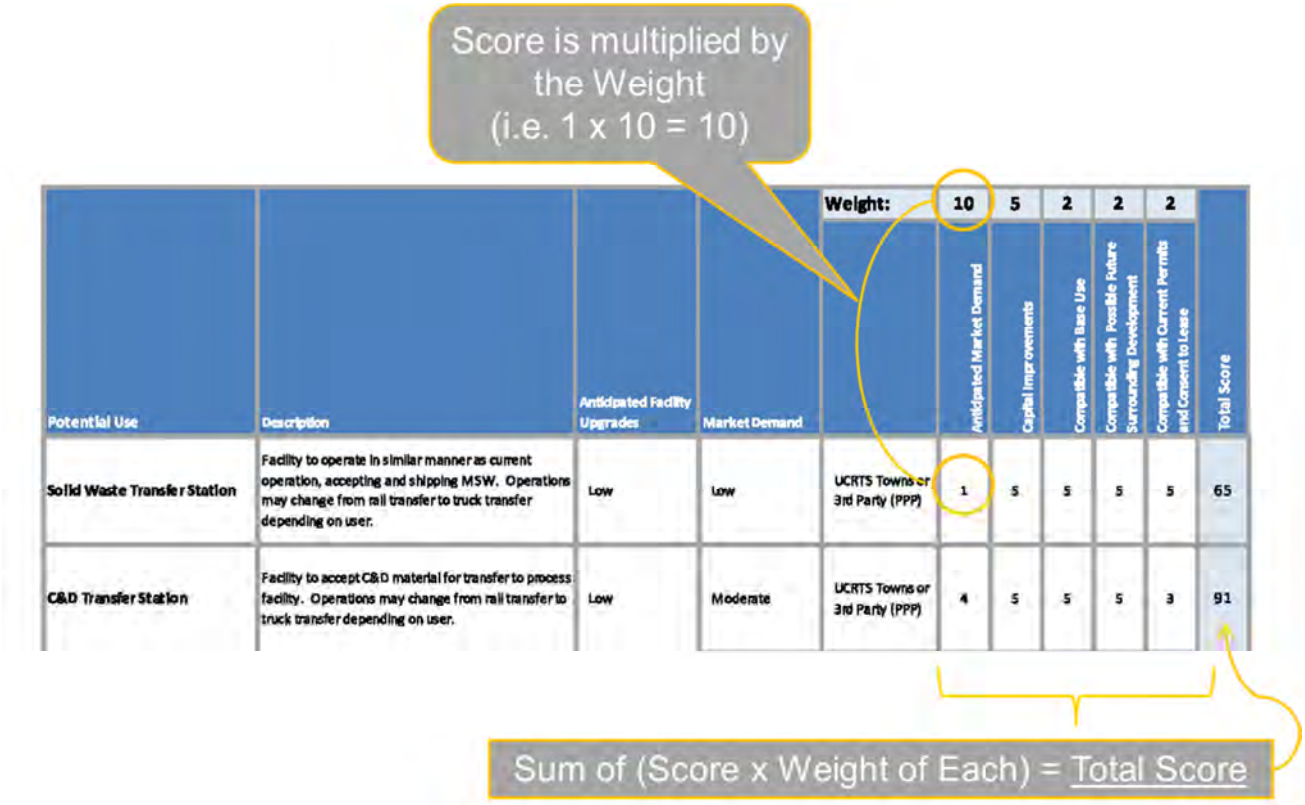
With this information, we developed a matrix of potential uses as follows (listed in no particular order):

1. Solid Waste Transfer Station
2. C&D Transfer Station
3. Single Stream Recycling Transfer Facility
4. Compost Facility, Outdoor
5. Salt Storage
6. Rail Head
7. WWTP/Septic Sludge, Food Waste, Organics Transfer Facility
8. C&D Processing Facility
9. Single Stream Recycling MRF
10. Composting, WWTP/Septic Sludge, Food Waste, Organics
11. Anaerobic Digestion Facility
12. Food Waste Preparation Facility
13. Renewable Energy Facility

The purpose of the matrix is to assist in assessing the highest and best use of the property. In creating the matrix, we weighted criteria by order of importance. The criteria and associated weights used are listed below:



The score of each criteria was then multiplied by the weight identified above, and the sum of the weighted score was tallied to provide the total score for each use. An example of this method is shown in the graphic below.



Potential Use	Description	Anticipated Facility Upgrades	Market Demand		Anticipated Market Demand	Capital Improvements	Compatible with Base Use	Compatible with Possible Future Surrounding Development	Compatible with Current Permits and Consent to Lease	Total Score
Weight:					**10**	**5**	**2**	**2**	**2**	
Solid Waste Transfer Station	Facility to operate in similar manner as current operation, accepting and shipping MSW. Operations may change from rail transfer to truck transfer depending on user.	Low	Low	UCRTS Towns or 3rd Party (PPP)	1	5	5	5	5	65
C&D Transfer Station	Facility to accept C&D material for transfer to process facility. Operations may change from rail transfer to truck transfer depending on user.	Low	Moderate	UCRTS Towns or 3rd Party (PPP)	4	5	5	5	3	91

We completed this exercise for anticipated current and future market demands. The results of the current and future matrixes are summarized in the tables below.

Upper Cape Regional Transfer Station

Summary of Matrix and Ranking of Potential Uses, Anticipated Current Demand

Rank	Description	Total Score
1	**C&D Transfer Station**	**91**
2	**Renewable Energy Facility, Potential for Compatible Use**	**79**
3	**Salt Storage, Potential for Compatible Use**	**73**
4	**Compost Facility, Outdoor**	**71**
5	Single Stream Recycling Transfer Facility	69
6	Rail Head	69
7	Solid Waste Transfer Station	65
8	WWTP/Septic Sludge, Food Waste, Organics Transfer Facility	59
9	Composting, WWTP/Septic Sludge, Food Waste, Organics	59
10	C&D Processing Facility	55
11	Food Waste Preparation Facility	49
12	Single Stream Recycling MRF	45
13	Anaerobic Digestion Facility	39

We also recognized future demands as shown in the summary table below:

Upper Cape Regional Transfer Station
Summary of Matrix and Ranking of Potential Uses, Anticipated Future Demand

Rank	Description	Total Score
1	**C&D Transfer Station**	**91**
2	**Solid Waste Transfer Station**	**85**
3	**Renewable Energy Facility, Potential for Compatible Use**	**79**
4	**Salt Storage, Potential for Compatible Use**	**73**
5	Compost Facility, Outdoor	71
6	Single Stream Recycling Transfer Facility	69
7	Rail Head	69
8	WWTP/Septic Sludge, Food Waste, Organics Transfer Facility	69
9	Composting, WWTP/Septic Sludge, Food Waste, Organics	69
10	Food Waste Preparation Facility	59
11	C&D Processing Facility	55
12	Single Stream Recycling MRF	45
13	Anaerobic Digestion Facility	39

The complete matrix is attached as Appendix G.

Based on our review of potential uses and based on our discussions with local representatives including member towns and private industry sources, the evaluation of potential uses has identified the following:

- C&D transfer appears currently to be the best public or private use based on our review.
  - There appears to be a smaller, viable market for composting of organic waste, septic, and sewer sludge.
- Renewable energy production is likely a viable opportunity, particularly with a 3rd party as it creates better economic opportunities. Wind turbines are not be a viable option based on proximity to runways. It is our understanding that this area has seen limitations with large scale interconnection to grid and may require costly upgrades. Renewable energy can be pursued in conjunction with existing transfer station operations (either as a C&D or MSW transfer facility)

Based on this assessment, it does not appear that continued use as an MSW transfer station is a viable option at this time; however Weston & Sampson believes that the facility may have long term value as a municipal solid waste facility as disposal contracts expire around 2025.

Considering our findings and considering existing intermunicipal arrangements, Bourne ISWM appears to be best fit to lead this effort for C&D facility. It is our understanding that Bourne is continuing to explore the use of the facility as a C&D transfer facility. It is also our understanding that they have had discussions with rail companies and out of state disposal

facilities. At this time, there is no final conclusion to their exploration effort. If Bourne cannot take the lead on a C&D transfer facility, an RFP approach should be used to identify private industry potential lessees of the facility. The RFP will help member towns identify actual market conditions and potential revenue streams.

In addition to C&D transfer facility, opportunities exist for potential coexistence with the transfer operations. For instance, the facility is currently used for CDL licenses testing. No financial payment is received for this use. At this time, CDL testing is expected to remain. There has also been discussion to use a portion of the site for salt storage. Salt storage would be used to supply Cape Cod towns with salt at a reduced rate. Additional coexistent uses will require permission through the ANG and will be required to be compatible with Base use as described in Section 2.0.

These findings were presented at a public meeting to the Board of Directors on October 7, 2015. A copy of that presentation is attached as Appendix H.

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6.0 SUMMARY AND CONCLUSIONS

Our study included a review of existing information and interviews with interested parties, including member towns, private industry, and government agencies. Through these efforts we were able to familiarize ourselves with the existing site, the regional waste needs, and market place. With our findings, we created a matrix system used to rate potential site uses.

In summary, this study identified:

- Uncertainty in land ownership status is expected to result in complications with any significant private funding of capital improvements. This is expected to limit potential reuse options.
- The ANG has stated that they will look for compatible uses with the base. Non compatible uses may include fuel storage and hazardous material storage.
- Portions of the land that the ANG is in the process of divesting from, the Army National Guard has requested to control (the lease). The feasibility of land control by the Army National Guard and the timelines for transfer are uncertain.
- MassDEP has stated that they will look into the viability of the existing Site Assignment under permitting review if a different operation is proposed.
- The building appears suitable for continued waste transfer operations. Capital improvements would be necessary in the near future for continued operation as a waste transfer station.
- Building improvements, change in use, or change in occupancy may trigger building upgrades to comply with the Massachusetts Building Code.
- The site may have long-term value to member towns as a transfer facility, for which it was developed and constructed, and should be maintained.
- Short term C&D (or residuals) transfer with some processing may currently be the best public or private use based on our review.
    - There appears to be a smaller, viable market for composting of organic waste, septic, and sewer sludge.
- Bourne ISWM appears to be best fit to lead this effort for C&D transfer facility. It is our understanding that Bourne is continuing to explore the use of the facility as a C&D transfer facility. It is also our understanding that they have had discussions with rail companies and out of state disposal facilities. At this time, there is no final conclusion to their exploration effort.
- If Bourne cannot take the lead on a C&D transfer facility, an RFP approach should be used to identify private industry potential lessees of the facility. The RFP will help member towns identify actual market conditions and potential revenue streams.
- In addition to a C&D transfer facility, opportunities exist for potential coexistence with the transfer operations. Potential feasible options include continued use of CDL testing, salt storage, and renewable energy.
- The IMA includes a final termination clause should the parties decide not to pursue renewal of the agreement (IMA). Should the Board decide to pursue this path, we would recommend that legal counsel review the IMA and the termination clause so that all parties can be clearly informed of the process.

FIGURES

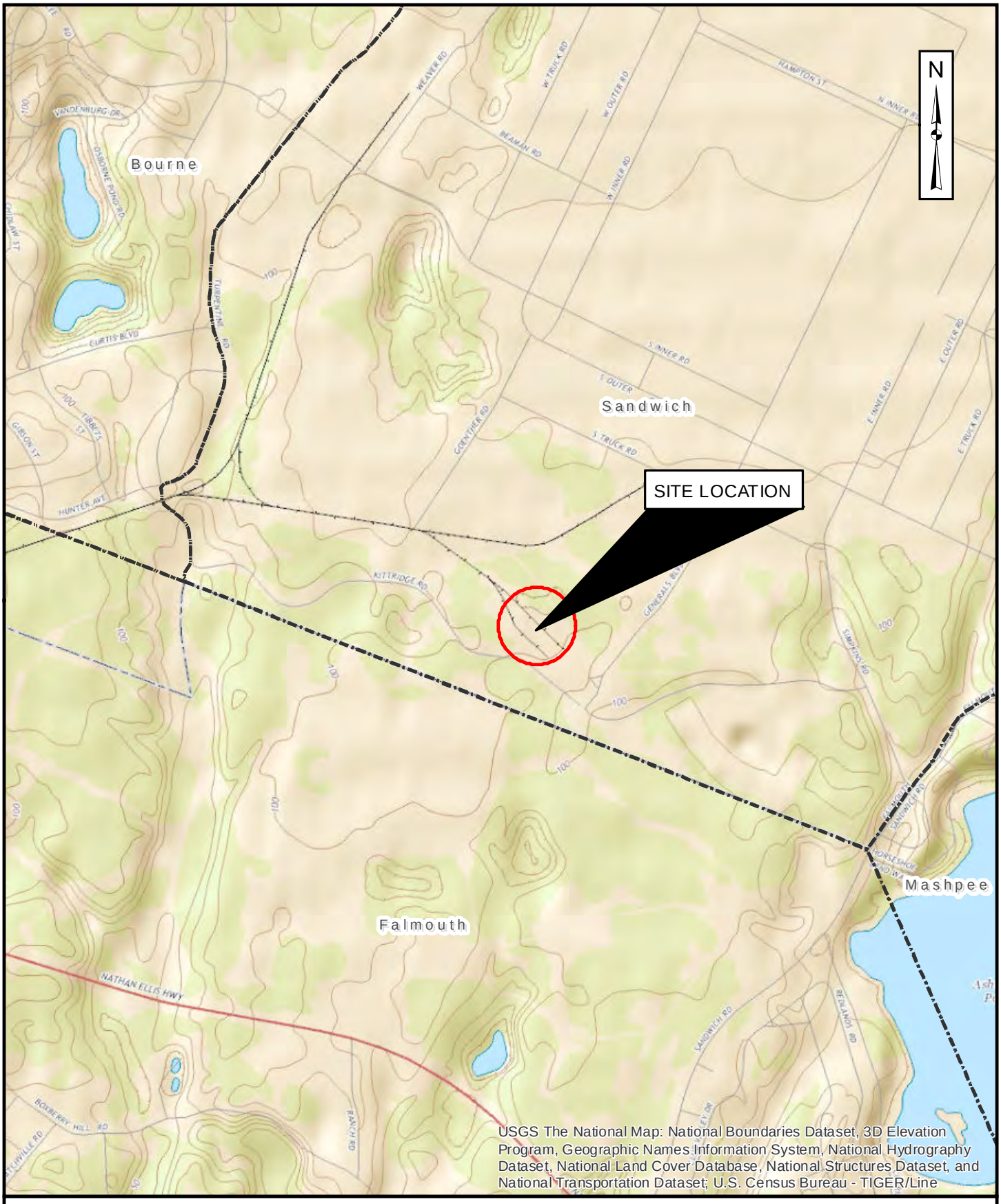

FIGURE 1
TOWN OF MASHPEE, MASSACHUSETTS
Re-Use Facility Study

LOCUS MAP

0 2,000 4,000 **Feet**

Weston&Sampson

Path: \\gisdatasrv\gis\DataStore\Client\Mashpee MA\Project\2150377 Re-Use Facility Study\MashpeeLocusMap_Figure1.mxd **User:** FrierJ **Saved:** 1/6/2016 5:11:10 PM **Opened:** 1/6/2016 5:11:27 PM

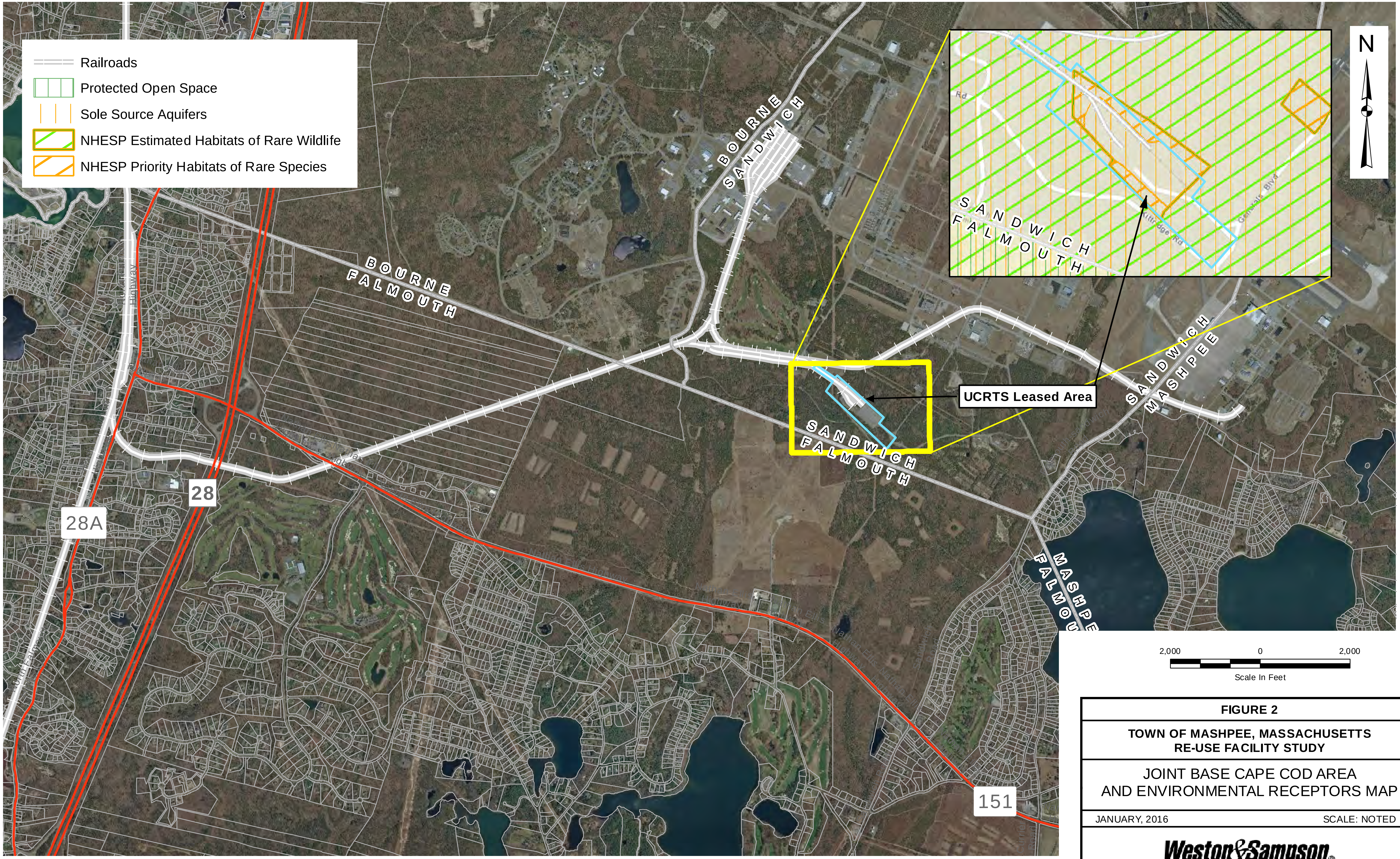

FIGURE 2

TOWN OF MASHPEE, MASSACHUSETTS
RE-USE FACILITY STUDY

JOINT BASE CAPE COD AREA
AND ENVIRONMENTAL RECEPTORS MAP

JANUARY, 2016 | SCALE: NOTED

Weston&Sampson

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Railroads
DEP Approved Zone IIs
IWPAs
Ground Water Well
Non-Community Well

GP WELL 5
GP WELL J
WELL 2
WELL 5
BELCHER WELL 7
CROOKED POND WELL
COONAMESSETT WELL
ASHUMET WELL

UCRTS Leased Area

BOURNE
FALMOUTH
BOURNE
SANDWICH
SANDWICH
FALMOUTH
MASHPEE
MASHPEE
FALMOUTH

N

4,000 0 4,000
Scale In Feet

FIGURE 2A

TOWN OF MASHPEE, MASSACHUSETTS
RE-USE FACILITY STUDY

JOINT BASE CAPE COD AREA
AND ENVIRONMENTAL RECEPTORS MAP

JANUARY, 2016 SCALE: NOTED

Weston&Sampson

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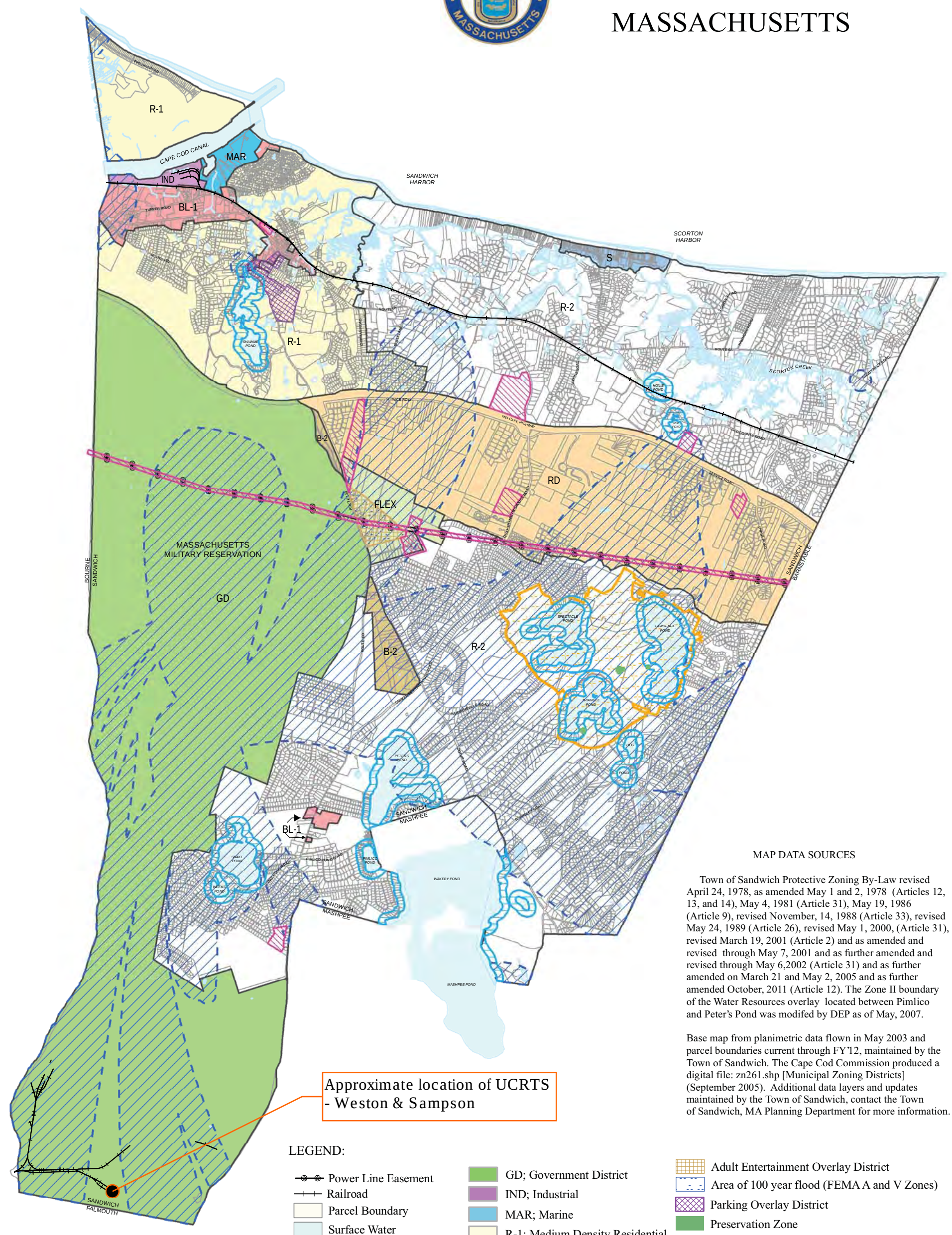
ZONING MAP
TOWN OF SANDWICH
MASSACHUSETTS



Approximate location of UCRTS - Weston & Sampson

MAP DATA SOURCES

Town of Sandwich Protective Zoning By-Law revised April 24, 1978, as amended May 1 and 2, 1978 (Articles 12, 13, and 14), May 4, 1981 (Article 31), May 19, 1986 (Article 9), revised November, 14, 1988 (Article 33), revised May 24, 1989 (Article 26), revised May 1, 2000, (Article 31), revised March 19, 2001 (Article 2) and as amended and revised through May 7, 2001 and as further amended and revised through May 6,2002 (Article 31) and as further amended on March 21 and May 2, 2005 and as further amended October, 2011 (Article 12). The Zone II boundary of the Water Resources overlay located between Pimlico and Peter's Pond was modifed by DEP as of May, 2007.

Base map from planimetric data flown in May 2003 and parcel boundaries current through FY'12, maintained by the Town of Sandwich. The Cape Cod Commission produced a digital file: zn261.shp [Municipal Zoning Districts] (September 2005). Additional data layers and updates maintained by the Town of Sandwich, contact the Town of Sandwich, MA Planning Department for more information.

LEGEND:

- Power Line Easement
- Railroad
- Parcel Boundary
- Surface Water
- BL-1; Business Limited 1
- B-2; Business 2
- FX; FLEX
- GD; Government District
- IND; Industrial
- MAR; Marine
- R-1; Medium Density Residential
- R-2; Low Density Residential
- RD; Ridge District
- S; Shore
- Adult Entertainment Overlay District
- Area of 100 year flood (FEMA A and V Zones)
- Parking Overlay District
- Preservation Zone
- Three Ponds District
- Surface Water Protection District (300 foot buffer of pond shores)
- Water Resources Overlay District
- Wireless Telecommunications Overlay District

SCALE 1:54,000

0 2,250 4,500 Feet

MAP DESCRIPTION: The map depicts municipal and zoning overlay districts as mandated by the town by-laws as of October 2011. The Town of Sandwich uses municipal zoning districts as a planning tool to help regulate uncoordinated or inappropriate uses of the town's land and other resources. Visit http://www.sandwichmass.org/publicdocuments/Town%20Of%20Sandwich.pdf for more information about the municipal zoning districts within the Town of Sandwich. Map boundaries are approximate and not intended for land ownership determination. This map, like all cartographic products, contains inherent aberrations in geography or thematic errors. The Cape Cod Commission and Town of Sandwich cannot be held legally responsible for personal or property damages resulting from any type of use of this map. Contact the Sandwich Planning Department for more information.

\GIS\Maps\Zoning\Zoning11x17_may2013approved.mxd

MAY 2013

APPENDIX A

Intermunicipal Agreement

INTERMUNICIPAL AGREEMENT

THIS IS AN INTERMUNICIPAL AGREEMENT AMONG THE TOWNS OF FALMOUTH, SANDWICH, MASHPEE AND BOURNE, MASSACHUSETTS FOR THE MAINTENANCE AND OPERATION OF A REGIONAL MUNICIPAL SERVICES FACILITY AT THE JOINT BASE CAPE COD.

The date of this agreement is the 30th day of June, 2015. Each town is a municipal corporation in Barnstable County, Massachusetts. Each town is acting by its Board of Selectmen as authorized by Massachusetts General Laws chapter 40, section 4A.

This agreement, except where the context clearly indicates otherwise, shall be construed as follows:

a. definitions include both singular and plural;

b. pronouns include both singular and plural and include both genders; and

c. fiscal year – beginning July 1st and ending the next June 30th.

WHEREAS, the towns have jointly constructed, operated and maintained a solid waste rail transfer station known as the Upper Cape Regional Transfer Station (UCRTS) at the Joint Base Cape Cod property (the "Site") pursuant to an Intermunicipal Agreement dated June 3, 1987, and subsequently amended on October 19, 1987, December 31, 1996, and June 16, 2008;

WHEREAS, the UCRTS shall cease operations at the Site and the afore-mentioned Intermunicipal Agreement will terminate effective June 30, 2015;

WHEREAS each town agrees that it is in its best interest to maintain an intermunicipal relationship among the subject parties with the prospective right to occupy, operate and use the Site upon which the UCRTS existed for such other purpose(s) as the parties may deem beneficial and appropriate; and

WHEREAS, this Agreement has been duly authorized by votes of the Board of Selectmen in each town and copies of the appropriate votes are annexed hereto as Exhibits A, B, C, and D and incorporated herein by reference.

NOW, THEREFORE, in consideration of the foregoing and of the mutual promises and agreements contained herein, the towns agree as follows.

I

THE FACILITY

Falmouth, Sandwich, Mashpee, and Bourne shall jointly finance, equip, maintain, repair and operate the Site for such purposes as may be determined by the respective towns, acting by their duly authorized representatives on the Board of Managers, referred to in Article III of this Agreement. In addition to the powers and duties described in Article IV of this Agreement, said Board of Managers shall be authorized to act on behalf of the Towns by entering into agreements with the department of the United States government known as Joint Base Cape Cod to enable the United States government to use the Site in the same manner as Falmouth, Sandwich, Mashpee, and Bourne. In this Agreement, Falmouth, Sandwich, Mashpee, and Bourne shall be referred to as a "town" or collectively as the "towns", and the Joint Base Cape Cod shall be referred to as "the JBCC".

II

THE JBCC SITE

The towns currently have a Consent from the United States Department of the Air Force permitting the continued use and occupancy of approximately 18.87 acres of land adjacent to railroad tracks located on the Site "to construct, use, maintain, control, operate and repair a waste and refuse transfer station known as the Upper Cape Regional Transfer Station". The towns, acting collectively by and through the Board of Managers, will pursue an amendment to said Consent or a lease or other suitable agreement from the other appropriate governmental entity with control over the Site in order to further the purposes of this Agreement. In the event of any conflict between the terms of this Agreement and the terms of the lease/consent agreement, the terms of the lease/consent agreement shall control and be dispositive.

III

BOARD OF MANAGERS

The existing Board of Managers, (hereinafter referred to as the "Managers"), consisting of one representative of each town and a non-voting representative designated by the JBCC or

other appropriate governmental entity with control over the Site, shall continue in existence, until the composition and/or method of appointment is modified by further amendment to this Agreement. Each town's Board of Selectmen shall appoint a representative to be a member of the Managers who shall serve until the next June 30th. In addition, each town's Board of Selectmen may select an alternate member to act in the absence of the regular member who shall serve for the same term. Each member shall have one vote and alternates may act only in the absence of the regular member.

IV

GENERAL DUTIES AND RESPONSIBILITIES OF BOARD OF MANAGERS

A. The Managers shall have the care, custody, management, and control of the Site and any facilities/improvements constructed or installed thereon. They shall continue to operate, equip, repair, and maintain the Site for authorized purposes in compliance with this Agreement and all requirements of local, state and federal law, rule, and regulation governing the use thereof.

B. The Managers may assign all or a portion of the Site to one or more third parties in exchange for payment of user fees sufficient to cover at least that party's proportional share of the operation, maintenance and capital costs of the Site, said user fees to off-set the towns' obligations to fund the site.

C. No substantial changes may be made in the location, use, design, layout, engineering or equipment of the Site, without the approval of the Managers.

D. In the operation and maintenance of the Site, the Managers shall make no expenditure and shall incur no indebtedness in an amount in excess of available Town Meeting appropriations.

E. A majority of the voting members shall constitute a quorum for purposes of transacting business, and the Managers may act by a majority of those present and voting at a duly noticed public meeting in accordance with the Massachusetts Open Meeting Law.

F. The Managers may also make such general policy recommendations to the towns concerning the operation of the Site as they shall deem fit.

G. The Managers shall ensure that complete and accurate books and records pertaining to the operation of the Site are maintained.

H. The Managers shall prepare or cause to be prepared an annual report of the management and operation of the Site no later than sixty (60) days after the end of each fiscal year and shall make available such report in each respective Town Hall when published.

I. The Managers shall act as the sole representatives of all towns in dealing with any and all state and federal regulatory agencies concerning the operation and maintenance of the Site.

J. The Managers shall manage the Site consistent with the terms of the lease/consent agreement referenced in Article II, and shall ensure the execution of each town's obligations under the lease/consent agreement and operating agreement. The Managers will ensure that each town and each town's employees, agents and /or contractors comply with the terms of the lease/consent agreement, operating agreement, and any Bylaws, regulations or policies adopted by the towns relating to the use of the property. When the Managers "execute" each town's obligations, it does so in the agency sense, acting as directed by the towns and not as an independent contractor.

VI

LEAD TOWN

For purposes of facilitating accomplishment of this Agreement, the Town of Falmouth will act as the lead town. The lead town shall act on behalf of and as agent for the other towns to further the purposes of this Agreement, to the extent authorized by the Managers. The powers, duties and responsibilities of the lead town shall include but not be limited to the following when duly authorized by the Managers:

A. To enter into contracts and leases relating to the Site;

B. To borrow funds for the capital purposes of this Agreement in its own name;

C. To hold title to the facility and all of its equipment in its own name;

D. To act as custodian of all funds relating to this agreement which funds will be spent by the Falmouth Board of Selectmen;

E. To hire employees for operation of any facilities on the Site as directed by the Managers who shall be employees of the Town of Falmouth and subject to the personnel policies of the Town of Falmouth; and

F. To procure policies of insurance as set forth in Article IX of this Agreement.

VII

APPORTIONMENT AND PAYMENT OF COSTS

A. Classification of Costs. In order to apportion among the towns costs incurred for capital expenditures and operation and maintenance of the Site, all such costs shall be divided into the following categories:

   1. Capital Costs. Capital costs shall include, but not be limited to, all costs for reconstructing or adding fixtures and improvements to the Site, to replace original equipment and furnishings thereof, and for remodeling or making extraordinary repairs thereto. Capital costs shall also include payment of all principal and all interest on bonds, notes, or other obligations issued at the request of the Board of Managers to finance such capital costs.

   2. Operating Costs. Operating costs shall include, but not be limited to, all costs other than capital costs, as defined in Section VII.A.1 above, including any costs incurred for maintenance, repairs, rent, or administration.

B. Financing. In order to pay Capital Costs and/or the Operating Costs, the Town of Falmouth, acting as the lead town, may borrow such funds when authorized by the Managers and the legislative body of each town.

C. Apportionment of Capital Costs. All capital costs shall be apportioned and shared equally by the towns, except if this Agreement is amended as provided in Section XVII to change the apportionment. The JBCC shall continue to bear a share of the capital costs as if it were a Town as a party to this Agreement. Any other user shall be treated in a manner similar to the JBCC. The Managers shall insure that any user agreement with the JBCC or any other user includes provisions for the payment of a proportional share of capital costs as well as operating costs. No capital costs shall be incurred unless and until sufficient funds have

been appropriated by the legislative bodies of each town. Each town and user shall timely pay to the Treasurer of the Town of Falmouth its share of capital costs as required by the Managers.

D. Budget. An annual budget for the operation and management of the Site shall be prepared by the Managers on or before December 15 of each year for the next fiscal year. The Managers shall adopt the annual budget, with such changes as it deems appropriate and necessary, and file a copy of said budget with the Town Clerk of each town and with a person designated by any user. The budget shall delineate all anticipated revenues and costs for the following fiscal year and shall include an accounting of all monetary receipts and expenditures from the previous fiscal year. The budget shall delineate each party's Annual Assessment as set forth below. Upon receipt of the budget, each town shall request that its legislative body appropriate sufficient funds to cover the party's Annual Assessment.

E. Annual Assessment. If the Managers determine that anticipated revenues from grants, gifts and user fees paid by users of the Site are not sufficient to fund the operation and maintenance of the Site for an approaching fiscal year, the estimated costs of operations and maintenance shall be apportioned equally among the towns, except if this Agreement is amended as provided in Section XVII to change the apportionment. Each town shall pay to the Treasurer of Town of Falmouth its share of the annual operating costs as called for in this Agreement as required by the Managers which shall be referred to as the Annual Assessment. Said Annual Assessment shall also include the party's share of the debt service on any capital costs previously authorized in accordance with this Agreement. Any annual operating surplus shall be carried forward to the next fiscal year and credited to each town's Annual Assessment in the next fiscal year.

F. Accounting. Any funds received by the Managers and/or the lead town, including but not limited to amounts paid by the towns pursuant to this Agreement, shall be deposited with the treasurer of the lead town and held as a separate account and may be expended, with the approval of the Managers, under the provisions of G.L. c. 44, §53A, for contribution towards the costs of this Agreement only.

VIII

USE OF SITE

A. Except as may otherwise be provided herein, any facilities and/or operations at the Site shall be operated and maintained for the mutual benefit of Falmouth, Sandwich, Mashpee, and Bourne.

B. In the event that any party's legislative body shall fail to appropriate and fund its Annual Assessment, or in the event that any town or the JBCC shall fail to pay the monies due in accord with the provisions of this Agreement, such town or JBCC's right to use the facilities on the Site shall be terminated by the Managers, however, said town or the JBCC shall, nevertheless, remain liable for all obligations undertaken by or on its behalf pursuant to this Agreement prior to the effective date of its termination and the remaining parties shall be reimbursed for all services and expenses rendered to that party prior to the effective date of its termination.

IX

PROTECTION AGAINST LIABILITY

A. For the duration of this Agreement, the Town of Falmouth shall purchase and maintain policies or riders on existing policies of insurance providing, as follows:

   1. The Town of Falmouth shall maintain adequate and appropriate insurance for such risks as the Managers deem appropriate which shall include general comprehensive liability insurance and shall name each town as an insured party. Risks shall include, without limitation, any risk or potential liability arising out of the operation of any facility on the Site or the lease and operating agreement.
   2. All insurance costs shall be included in the operating budget each year.
   3. The Managers shall at all times require adequate and appropriate insurance from all parties engaged in the maintenance, operation and use of the Site, evidenced by a certificate of insurance to be furnished to the Board of Managers.

B. In the case of any unplaced insurance or self-insurance, the parties further agree that all damages, costs, charges, judgments, expenses, as well as the cost of investigating and

defending claims against any of the four towns and users, including attorneys' fees and expenses, that Falmouth, Sandwich, Mashpee or Bourne may incur by reason of any alleged act, neglect, omission, or default on its part or that of its employees, agents, or contractors or the Managers or its agents or contractors, in any way arising out of the maintenance and/or operation of the Site shall be shared by said towns and users in proportion to each town's and user's then current share of operating costs, regardless of fault, to the extent that such expenses shall not be covered by insurance and to the extent permitted by law.

X

CASUALTY AND EMINENT DOMAIN

In the event that any property within or upon the Site shall be damaged or taken by eminent domain, the Managers shall determine and direct what use shall be made of all proceeds that may be recovered on account of such damage or taking; but if it shall be unable or unwilling to make such determination within ninety (90) days after such funds have been received, the net proceeds shall be divided and distributed to the towns and users in proportion to each town's and user's share of original capital costs as provided under this Agreement.

XI

TAXATION

To the extent permitted by law, all property used in connection with the operation of the aforesaid facility shall be exempt from taxation and fees by any town.

XII

ANNUAL REPORTS

The Board of Managers shall submit a written report each year to the Selectmen of each town and the person designated by any user containing financial statements concerning the operation of the UCRTS as well as a statement showing the methods that were used to compute the annual charges apportioned to each town.

XIII

EFFECTIVE DATE

This Agreement shall become effective upon the execution of this instrument as duly authorized by each party hereto in accord with the provisions of G.L. Ch. 40, Sec. 4A.

XIV

TERM

Unless sooner terminated as provided elsewhere in this Agreement, this Agreement shall expire on June 30, 2018 and may be extended by mutual agreement.

XV

TERMINATION

A. Withdrawal. During the term of this Agreement, any town may withdraw from this Agreement at the end of any fiscal year provided that notice of such withdrawal is given to the other towns at least one year prior to the effective date of withdrawal. Then, in such event:

1. No town which shall have withdrawn its support hereof, hereinafter referred to as the "Terminating Town", shall be entitled to any further use of facilities located on the Site.
2. The Terminating Town shall pay to the Falmouth Treasurer any amounts that may have been due at the time of such event on account of the current operating costs of said facility within thirty (30) days after such amount shall have been determined by the Managers and certified to the Falmouth Treasurer. Such amount may subsequently be adjusted and become payable as provided in this Agreement.
3. The Terminating Town shall to pay to the Falmouth Treasurer any amounts that may have been due at the time of such event, on account of the capital costs of the Site facilities within thirty (30) days after such amount shall have been determined by the Managers, and shall continue to pay any amount of capital costs incurred prior to the date of such event that may become due in the future, as such payment shall become due. Any such amount may subsequently be adjusted and become payable as provided in this Agreement.

4. The other towns shall thereupon have the right to continue this Agreement with their proportional shares adjusted accordingly.

B. Final Termination. In the event that the parties hereto do not extend the term of this Agreement or if it shall become impossible to operate the facility for reasons beyond the control of the parties, or if the parties shall determine by majority vote of the Board of Selectmen of each member Town to cease operations at the Site for any reason, the Managers shall, at the end of this Agreement, or at such earlier date as the parties shall determine by agreement, obtain an appraisal by a qualified appraiser selected by the Managers by a majority vote, of the existing Site improvements, excluding the land but including all structures, equipment, supplies, and materials associated therewith, and said improvements shall thereupon be disposed of as follows:

1. The Site facilities/ improvements shall be disposed of with the approval of the Managers as follows:
   a. Any member Town, or combination of Towns, shall have a right of first option to purchase any asset jointly purchased pursuant to this Agreement at the appraised value determined in compliance with this Agreement, said right of first refusal to be exercised within one hundred and twenty (120) days of the Managers' acceptance of the appraisal of the jointly purchased assets. If more than one town exercises a right of first option for the same asset, the asset will be awarded to the party chosen by a secret drawing witnessed by the Managers;
   b. If no party exercises its right of first option and the assets have market value, the assets (excluding the land) shall be sold by the Managers and the net proceeds shall be divided among the towns and the users in the same proportion that the towns and users shared the capital costs incurred as provided under this Agreement;
   c. If said facilities/improvements shall be deemed to have no market value, or if the Managers shall determine that it constitutes a nuisance or liability, the Managers may demolish and dispose of the same. The cost of such demolition/ disposition, after any credit for salvage value, shall be borne among the towns and users in the

same proportion the towns and users shared the original capital costs as provided under this Agreement.

d. In any other manner which may be authorized by vote of the Managers.

C. Upon termination of this Agreement, the obligations of one town to the other under this Agreement shall cease, except for any reimbursement or adjustments that may be due for any operating costs up to and including the date of termination and any outstanding indebtedness or obligations due as a result of capital costs incurred during the term of this Agreement.

XVI

AMENDMENT

This Agreement may be amended by written amendment from time to time provided that no such amendment shall become effective until approved by a majority of the Board of Selectmen in each member town.

XVII

FILING

A copy of this Agreement and all amendments thereto shall be filed with the Town Clerk of each member town as a public document.

XVIII

NOTICE

Any notice, demand, or request required to be given hereunder shall be deemed sufficiently given or served on any of the parties hereto if mailed, postage prepaid, to their respective Board of Selectmen, or to such other address as shall be designated by the parties in writing for that purpose.

IN WITNESS WHEREOF, the parties have hereto set their hands and seals, the Falmouth Board of Selectmen, all thereunto duly authorized, who, however, incur no personal liability by reason of the execution hereof or anything herein contained, in duplicate, the date and year first above written.

TOWN OF FALMOUTH

Approved as to form:

Falmouth Town Counsel

IN WITNESS WHEREOF, the parties have hereto set their hands and seals, the Mashpee Board of Selectmen, all thereunto duly authorized, who, however, incur no personal liability by reason of the execution hereof or anything herein contained, in duplicate, the date and year first above written.

TOWN OF MASHPEE

Approved as to form:

Mashpee Town Counsel

IN WITNESS WHEREOF, the parties have hereto set their hands and seals, the Sandwich Board of Selectmen, all thereunto duly authorized, who, however, incur no personal liability by reason of the execution hereof or anything herein contained, in duplicate, the date and year first above written.

TOWN OF SANDWICH

Approved as to form:

Sandwich Town Counsel

IN WITNESS WHEREOF, the parties have hereto set their hands and seals, the Bourne Board of Selectmen, all thereunto duly authorized, who, however, incur no personal liability by reason of the execution hereof or anything herein contained, in duplicate, the date and year first above written.

TOWN OF BOURNE

Approved as to form:

Bourne Town Counsel Robert S Troy

APPENDIX B

Consent Agreement

DEPARTMENT OF THE AIR FORCE
CONSENT TO CROSS U.S. GOVERNMENT LEASED AREA
AT
OTIS ANG BASE, MASSACHUSETTS

Consent No. 07-10

KNOW ALL MEN BY THESE PRESENTS:

That the consent of the United States is hereby granted to the TOWNS OF BOURNE, FALMOUTH, MASHPEE, AND SANDWICH in the Commonwealth of Massachusetts, hereinafter designated collectively as "grantee", to construct, use, maintain, control, operate and repair a waste and refuse transfer station known as the **Upper Cape Regional Transfer Station**, hereinafter referred to as a "structure", across, over and under approximately 18.87 acres of land being a portion of the lands where the United States has acquired a lease (No. DACA51-5-75-293, as modified and amended) from the Commonwealth of Massachusetts, which lands are known as a portion of Otis Air National Guard Base, Massachusetts. The area for said structure for the purpose of this consent is located as shown on Exhibit "A" and described in Exhibit "B", both exhibits attached hereto and made a part hereof.

This consent is granted subject to the following conditions:

1. It is understood that this consent is effective only insofar as the property rights of the United States in the land to be occupied are concerned, and it does not relieve the grantee from the necessity of obtaining grants from the owners of the fee and/or other interests therein.

2. The privileges authorized herein shall not be commenced until appropriate rights shall have been obtained by the grantee from the record owners and encumbrancers of the fee title to the land involved.

3. The exercise of the privileges hereby consented to shall be without cost or expense to the Department of the Air Force, under the general supervision and subject to the approval of the officer having immediate jurisdiction over the property, hereinafter referred to as "said officer," and subject to such regulations as may be prescribed from time to time~~, including but not limited to the specific conditions, requirements and specifications set forth in Exhibit "B", attached hereto and made a part hereof~~.

4. The grantee shall supervise and maintain the said structure and cause it to be inspected at reasonable intervals, and shall immediately repair any damage found therein as a result of such inspection, or when requested by said officer to repair any defects. Upon completion of the installation of said structure or the making of any repairs thereto, the premises shall be restored immediately by the grantee, at the grantee's own expense, to the same condition as that in which they existed prior to the commencement of such work, to the satisfaction of said officer.

5. Any property of the United States damaged or destroyed by the grantee incident to the exercise of the privileges herein granted shall be promptly repaired or replaced by the grantee to the satisfaction of the said officer, or in lieu of such repair or replacement, the grantee shall, if so required by the said officer and at his option, pay to the United States money in an amount sufficient to compensate for the loss sustained by the United States by reason of damage to or destruction of Government property.

6. The United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the exercise of the privileges herein granted, or for damages to the property of the grantee, or for damages to the property or injuries to the person of the grantee, or the persons of grantee's officers, agents, servants, or employees or others who may be on said premises at their invitation or the invitation of any one of them arising from governmental activities on or in the vicinity of the said premises, and the grantee shall hold the United States harmless from any and all such claims.

7. This consent is effective only as to the following rights of the United States in the lands hereinabove described.

8. The United States shall in no case be liable for any damage or injury to the construction herein authorized which may be caused by any action of the Government, under the rights obtained in its lease, either hidden or known, or that may result from future operations undertaken by the Government, and no claim or right to compensation shall accrue from such damage or injury, and if further operations of the United States require the alteration or removal of the structure herein authorized, the grantee shall, upon due notice from the Chief of Engineers, Department of the Army, alter or remove said structure without expense to the Government and subject to the supervision and approval of the officer having jurisdiction over the property and no claim for damages shall be made against the United States on account of such alteration or removal.

9. Construction and/or operation, maintenance, and use of said structure incident to the exercise of the privileges hereby granted shall be in such a manner as not to conflict with the rights of the Government, nor to interfere with the operations by the Government under such rights, nor to endanger lives and safety of the public.

10. This consent may be terminated by the Secretary of the Air Force upon reasonable notice to the grantee if the Secretary of the Air Force shall determine that installation to which consent is hereby granted interferes with the use of said land or any part thereof by the United States, and this consent may be annulled and forfeited by the declaration of the Secretary of the Air Force for failure to comply with any and all of the provisions and conditions of this consent, or for nonuse for a period of two years, or for abandonment.

11. Upon the relinquishment, termination, revocation, forfeiture or annulment of the consent herein granted, the grantee shall vacate the premises, remove all property of the grantee therefrom, and restore the premises to a condition satisfactory to the officers having immediate jurisdiction over the property. If the grantee shall fail or neglect to remove said property and so restore the premises, then, at the option of the Secretary of the Air Force, the said property shall either become the property of the United States without compensation therefore, or the Secretary of the Air Force may cause it to be removed and the premises to be so restored at the expense of the grantee, and no claim for damages against the United States, or its officers or agents, shall be created by or made on account of such removal and restoration.

12. The terms and conditions of this consent shall extend to and be binding upon the successors and assigns of the grantee.

13. The grantee within the limits of his respective legal powers shall comply with all Federal, interstate, state and/or local governmental regulations, conditions, or instructions for the protection of the environment and all other matters as they relate to real property interests granted herein.

14. The grantee shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archeological, architectural or other cultural artifacts, relics, remains or objects of antiquity. In the event such items are discovered on the premises, the grantee shall immediately notify the District Commander, New England District, and the site and the material shall be protected by the grantee from further disturbance until a professional examination of them can be made or until clearance to proceed is authorized by the District Commander.

15. Except as otherwise specifically provided, any reference herein to "Secretary", "District Engineer", "Installation Commander", or "said officer" shall include their duly authorized representatives. Any reference to "grantee" shall include assignees, transferees, and their duly authorized representatives.

16. Additional conditions.

a. The parties acknowledge that grantee has been using the area since approximately 1987 and wishes to continue its use by seeking permission from the owner of the fee and/or other interests therein.

PRIOR TO the execution of this consent, certain words in Condition 3 were deleted.

Consent No. 07-10
Otis ANG Base, MA

IN WITNESS WHEREOF, I have hereunto set my hand by the authority of the Secretary of the Air Force, this 27 day of Sep, 2007

UNITED STATES OF AMERICA

DEXTER J. COCHNAUER
Chief Operations Officer

THIS CONSENT is also executed by the grantee this 5th day of September, 2007.

TOWNS OF BOURNE, FALMOUTH, MASHPEE, AND SANDWICH

Represented by the BOARD OF MANAGERS of the UPPER CAPE REGIONAL TRANSFER STATION

Board Representative
Town of Bourne

Board Representative
Town of Falmouth

Board Representative
Town of Mashpee

Board Representative
Town of Sandwich

Assented to:

Board Representative
Otis ANG Base

Consent No. 07-10
Otis ANG Base, MA

CERTIFICATE OF AUTHORITY

I, John S. Elliott, certify that I am the Chairman of the Board of Managers of the Upper Cape Regional Transfer Station, and that _____, _____, _____, and _____, who signed the foregoing instrument on behalf of said Board, were then members of said Board. I further certify that the said officers were acting within the scope of powers delegated to this officer by the governing bodies of the grantee in executing said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand, and the seal of the Board of Managers of the Upper Cape Regional Transfer Station (owned by the Towns of Bourne, Falmouth, Mashpee, and Sandwich in the Commonwealth of Massachusetts), this 5th day of September, 2007.

John S. Elliott

APPENDIX C

Site Assignment Information

OWN OF SANDWICH
THE OLDEST TOWN ON CAPE COD

SANDWICH, MASSACHUSETTS
TELEPHONE 888-4200

FICE OF THE:
BOARD OF HEALTH

The Sandwich Board of Health held a public hearing on February 1, 1988 at 7:08pm at the Town Hall Annex. and members of the Board present were Acting-Chairman Patrick Tatano, Brian Dixon and Board of Health Agent Mr. Hamlen.

The public hearing was for the site assignment at Otis Transfer Station.

The Chairman of the Board of Managers of the Upper Cape Transfer Station was present as well as Mark Gould who is the S.E.A. Engineer who did the designs for the Otis Transfer Station.

Mr. Gould explained the use of the station as well as the facts as to how many vehicles we are looking at as for trucks coming and going from the site at the Southeast portion of the Otis Air Force Base. The solid waste transfer station will take solid waste from Sandwich, Falmouth, Mashpee and the Base.

The number of trucks per day going into the base will be two Semi-Trailers, five Packer Trucks and one Mashpee truck. There will be one train per day which will take the waste to New Seabury. Everything will be covered. The train will consist of five to seven railroad cars leaving every night and services six days a week. The railroad cars will be completely sealed on the bottom like a tank.

Mr. Tatano wanted to know about the drainage inside the building and Mr. Gould informed the Board that there would be drainage pipes that will go into a sealed tank system. There will be a small leaching pit and septic system on the site for use of the employees. The transfer station does not want the trucks to deliver directly to the trains because they want to be able to inspect the waste to make sure there is no toxic materials and other matter.

The septic system. They bored a test hole and the soil test was under two minutes per inch. The Board feels there should be a perc test done with the Board of Health Agent Mr. Hamlen present.

Mr. Tatano feels the Snake Pond Road traffic is a concern but it seems to be low.

Mr. Tatano makes a motion and Mr. Dixon seconds the motion. Approved under Section 150A. Advertise in the Sandwich Happenings on February 5th, 1988 edition. Post.

Meeting Adjourned.

PUBLIC HEARING

The Town of Sandwich Board of Health held a public hearing on February 1, 1988 at 7 p.m. at the Town Hall Annex, acting in accordance with Chapter 111, Section 150A of the Massachusetts General Laws hereby assigns as a site for use for a solid waste facility, an 18 acre parcel of land located off Kittredge Road. The aforesaid assignment is subject to the following conditions:

1) No construction or use of the facility shall take place until the plans, specifications, and operational procedures have been approved by the Sandwich Board of Health and the Massachusetts Department of Environmental Quality Engineering and their approval in writing has been obtained. Board of Health approval shall be subject to such limitations as may be necessary to protect the public health, comfort, and convenience.

2) The access road shall be as wide as possible within existing site constraints.

3) Electric power utility lines shall be underground.

Any person aggrieved by this action of the Sandwich Board of Health may, within sixty (60) days of this publication, appeal to the Commissioner of the Department of Environmental Quality Engineering, c/o Docket Clerk, 20th Floor, 100 Cambridge Street, Boston, Massachusetts 02202.

Patrick Tatano,
Acting Chairman
Tom Davis
Brian Dixon

2/5

APPENDIX D

As-Built Plans

CONSTRUCTION OF UPPER CAPE REGIONAL TRANSFER STATION

CONTRACTING AGENCY: TOWN OF FALMOUTH, MASSACHUSETTS
LOCATION: TOWN OF SANDWICH, MASSACHUSETTS

BOARD OF MANAGERS

FALMOUTH:

VIRGINIA VALIELA, CHAIRMAN
RICHARD H. BENNETT

MASHPEE:

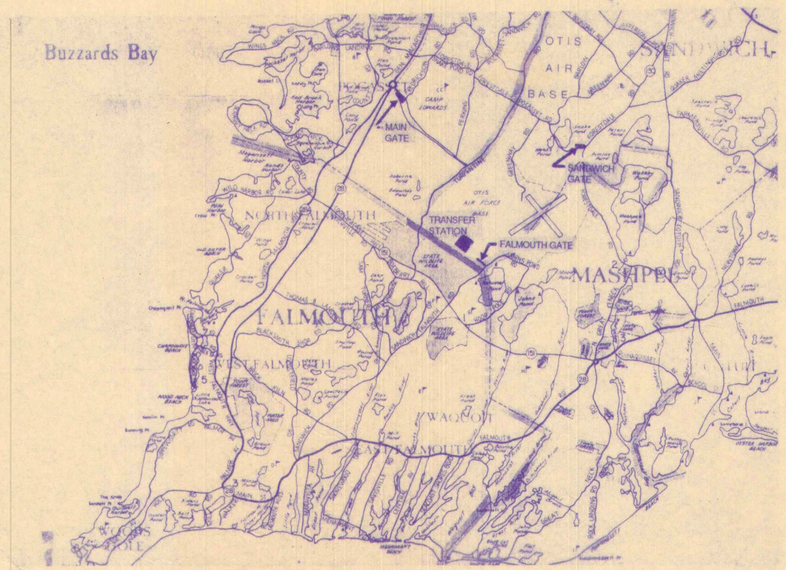
PETER M. LAWRENCE
WILLARD L. HANSON

SANDWICH:

ROBERT T. BOON
WILLIAM N. MARAVELL

FALMOUTH BOARD OF PUBLIC WORKS:

JOHN S. ELLIOT, CHAIRMAN
MANUEL RAPOZA
RICHARD H. BENNETT

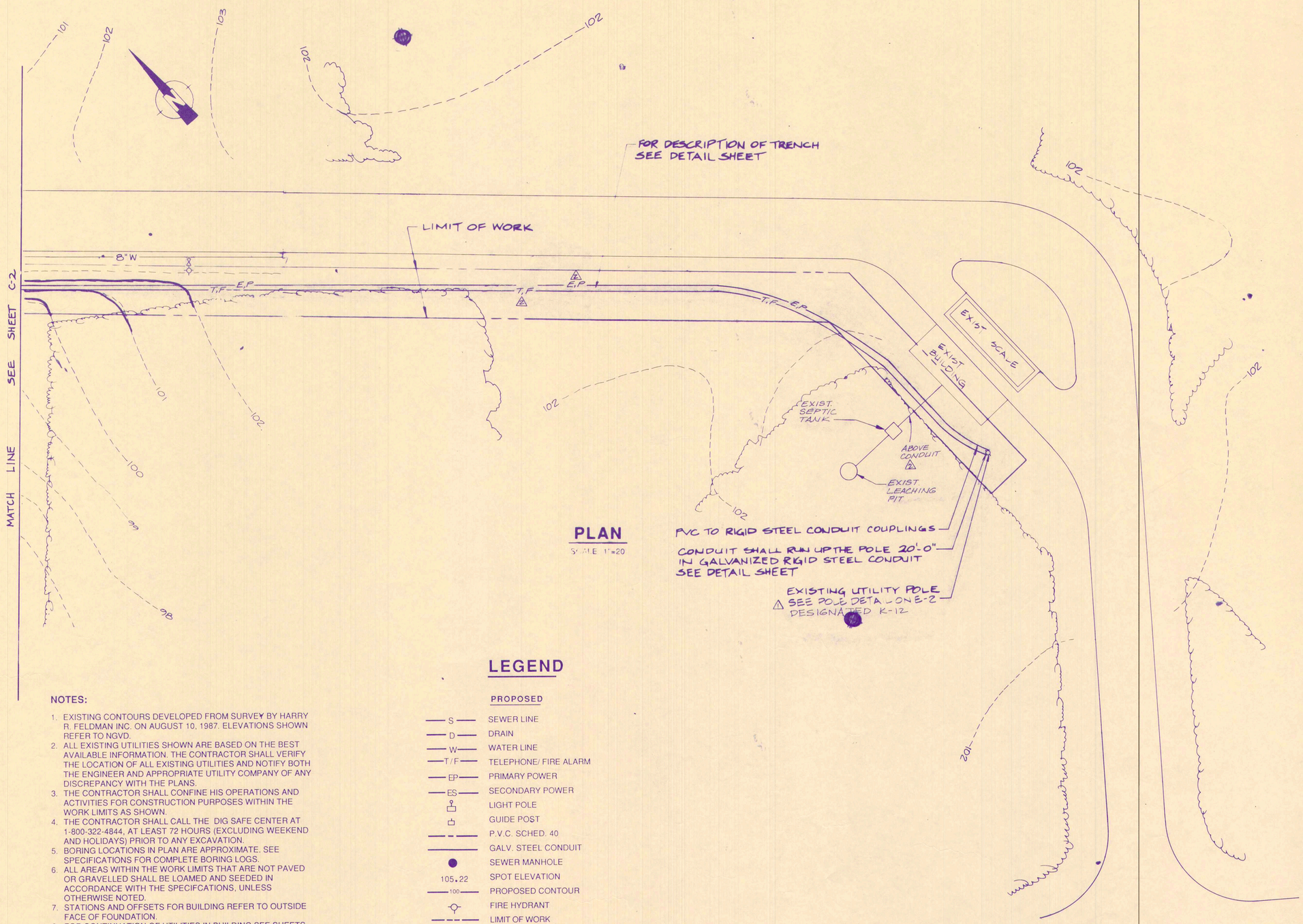


LOCUS PLAN
SCALE: 1"=1.5 MILES

LIST OF DRAWINGS

DRAWING NUMBER	DRAWING TITLE
C-1	LAYOUT & GRADING PLAN
C-2	LAYOUT & GRADING PLAN
C-3	LAYOUT PLAN
C-4	GRADING PLAN
C-5	DETAILS
C-6	WALL SECTIONS & DETAILS
A-1	FLOOR & ROOF PLANS, DETAILS LEGEND & ABBREVIATIONS
A-2	ELEVATION & SECTION
A-3	DETAILS & SCHEDULES
S-1	FLOOR & FOUNDATION PLANS
S-2	SECTIONS & DETAILS
S-3	SECTIONS & DETAILS
M-1	MECHANICAL & PLUMBING PLAN
E-1	ELECTRICAL PLAN
E-2	ELECTRICAL DETAILS

SEA Consultants Inc. Engineers/Architects
Cambridge, Massachusetts
South Portland, Maine
Wethersfield, Connecticut



PLAN

SCALE 1"=20

LEGEND

PROPOSED

—S—	SEWER LINE
—D—	DRAIN
—W—	WATER LINE
—T/F—	TELEPHONE/ FIRE ALARM
—EP—	PRIMARY POWER
—ES—	SECONDARY POWER
	LIGHT POLE
	GUIDE POST
— - —	P.V.C. SCHED. 40
———	GALV. STEEL CONDUIT
●	SEWER MANHOLE
105.22	SPOT ELEVATION
—100—	PROPOSED CONTOUR
	FIRE HYDRANT
— - - —	LIMIT OF WORK

EXISTING

	UTILITY POLE
	SOIL BORING
—D—	DRAIN PIPE
105 x 22	SPOT ELEVATION
---- 100 ---	EXISTING CONTOUR

NOTES:

1. EXISTING CONTOURS DEVELOPED FROM SURVEY BY HARRY R. FELDMAN INC. ON AUGUST 10, 1987. ELEVATIONS SHOWN REFER TO NGVD.
2. ALL EXISTING UTILITIES SHOWN ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND NOTIFY BOTH THE ENGINEER AND APPROPRIATE UTILITY COMPANY OF ANY DISCREPANCY WITH THE PLANS.
3. THE CONTRACTOR SHALL CONFINE HIS OPERATIONS AND ACTIVITIES FOR CONSTRUCTION PURPOSES WITHIN THE WORK LIMITS AS SHOWN.
4. THE CONTRACTOR SHALL CALL THE DIG SAFE CENTER AT 1-800-322-4844, AT LEAST 72 HOURS (EXCLUDING WEEKEND AND HOLIDAYS) PRIOR TO ANY EXCAVATION.
5. BORING LOCATIONS IN PLAN ARE APPROXIMATE. SEE SPECIFICATIONS FOR COMPLETE BORING LOGS.
6. ALL AREAS WITHIN THE WORK LIMITS THAT ARE NOT PAVED OR GRAVELLED SHALL BE LOAMED AND SEEDED IN ACCORDANCE WITH THE SPECIFCATIONS, UNLESS OTHERWISE NOTED.
7. STATIONS AND OFFSETS FOR BUILDING REFER TO OUTSIDE FACE OF FOUNDATION.
8. FOR CONTINUATION OF UTILITIES IN BUILDING SEE SHEETS M-1 AND E-1.
9. PAYMENT LIMITS: PAYMENT OF RESTORATION OF DISTURBED AREAS UNDER THIS CONTRACT APPLIES ONLY TO AREAS WITHIN THE DEFINED WORK LIMITS. ALL DISTURBANCES TO EXISTING CONDITIONS BEYOND THE PRESCRIBED WORK LIMITS SHALL BE FULLY RESTORED BY THE CONTRACTOR TO PRE-CONTRUCTION CONDITIONS OR BETTER AT NO ADDITIONAL COST TO THE OWNER.
10. CONTRACTOR TO ESTABLISH CONSTRUCTION BASE LINE IN THE FIELD.
11. CONTRACTOR SHALL OVERLAY EXISTING BITUMINOUS CONCRETE WITH 1 1/2" OF BITUMINOUS CONCRETE AS SHOWN ON THE PLANS WHEN FINAL PAVING IS PERFORMED.

AS-BUILT

C-1

SEA CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions
1 AS-BUILT REVISIONS 10-31-89
ELECTRICAL UPDATE/CLEANOUT DETAIL 4-5-88

Scale AS SHOWN
Date OCT. 1987
Job no. 506-8712
Designed by DAB, PFR
Drawn by JCP
Checked by MG
Sheet C-1
Approved by

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
LAYOUT AND GRADING PLAN

File No.

MAKEPEACE

EXISTING HYDRANT

EXISTING BIT CONCRETE PAD TO BE REMOVED AND REPLACED AS NECESSARY TO INSTALL SCALE, FOOTING & APPURTENCES

DESIGNATED HOT LOAD AREA

EDGE OF EXISTING BITUMINOUS CONCRETE PAVED AREA

WHEEL GUARD POST (TYP) SEE DETAIL THIS SHEET

SPEAKER/MICROPHONE STATION NO. 1 SEE DETAIL SHEET E-2

RESET BUMPER

REPAIR PAVING

REPAIR PAVING

EDGE OF PAVEMENT

LIMIT OF TRACK REMOVAL

LIMIT OF WORK

EDGE OF EXISTING BITUMINOUS CONCRETE

LIMIT OF BIT. CONC. OVERLAY

MEET & MATCH EXISTING & PROPOSED PAVEMENT

POWER HANDHOLE SEE DETAIL ON E-2 (TYP.)

COMBINATION TEL/FIRE ALARM HANDHOLE SEE DETAIL ONE 2 (TYP)

SEE SHEETS C-3 & C-4

SEE SHEET C-1

MATCH LINE

MATCH LINE

FOR BIT. CONC. OVERLAY WITHIN COAL STORAGE AREA, SEE CROSS SECTION ON SHEET C-5

℄ ROAD WEST EXTENDED

BITUMINOUS CONC. OVERLAY

YIELD SIGN

CAPE COD BERM

NO OVERLAY REPAIR EXISTING

SCALE

BIT. CONC. RAMP

BIT. CONC. OVERLAY

PAVEMENT MARKING

REPAIR BIT. CONC.

LIMIT OF BITUMINOUS CONCRETE OVERLAY

POWER & TEL./FIRE ALARM HANDHOLES SEE DETAIL ON E-2

RIGID STEEL TO SCHED 40 PVC COUPLING AT ROAD CROSSING (TYP.)

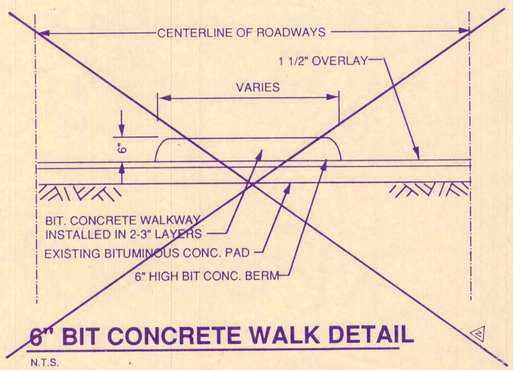
FOR DESCRIPTION OF TRENCH SEE SHEET E-2

YELLOW WARNING TAPE 1'-0" BELOW GRADE

2" WATER SERVICE SEE DETAIL SHEET C-5

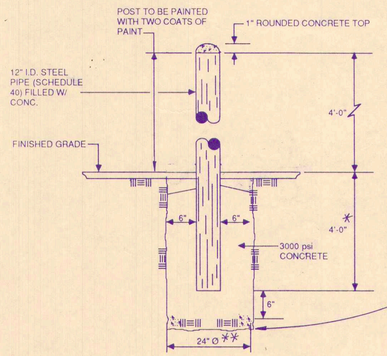
SPEAKER/MICROPHONE STATION NO. 2 SEE DETAIL SHEET E-2

LIMIT OF WORK



6" BIT CONCRETE WALK DETAIL

N.T.S.



WHEEL GUARD POST DETAIL

N.T.S.

PLAN

SCALE: 1"=20'

BOLLARD NOTES:

* WHERE BOLLARDS ARE LOCATED ON PILASTER FOOTING, DIM. = 2'-0"

** WHERE BOLLARDS ARE LOCATED ON PILASTER FOOTING, DIM. = 3'-8"

USE BOND BREAKER TO PREVENT BONDING BETWEEN BOLLARD CONCRETE AND TOP OF PILASTER FOOTING (WHERE NECESSARY)

AS-BUILT

C-2

SEA CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions
10-31-89 AS-BUILT REVISIONS
4-25-90 ELECTRICAL UPDATE/CLEANOUT DETAIL

Scale AS SHOWN
Date OCT 1987
Job no. 506-872
Designed by DKE/HFK
Drawn by JCD
Checked by MG
Approved by
Sheet C-2

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
LAYOUT AND GRADING PLAN

File No.

131193
MAKEPEACE

170.90'
90'
54'
72'
18'
20'
LIMIT OF WORK
POLE BASE DETAIL ON SHEET E-2 (TYP.)
WHEEL GUARD POSTS TO GUIDE POSITIONING OF RAILCAR 4 FT OFF RAIL
EDGE OF PAVEMENT
MATCH LINE SEE SHEET C-2
CONCRETE FOUNDATION TUBES FOR STAIRWAY TO BE LOCATED IN COORDINATION WITH STAIR FABRICATOR
3/4"C. 2#10 & 1#10 GRD.
EXISTING DEPRESSED CARTWAY TO BE FILLED WITH COMPACTED STRUCTURAL FILL FOR A DISTANCE OF 40 FT EACH SIDE OF CENTERLINE OF TRACK
PT STA 2+50 90
PC STA 4+21 80
CAP COD BERM
EXIST. CURB LINE
CURB BOX FOR 2" WATER SERVICE
LP-6 (20A/2P) 3/4"C. 2#10 & 1#10GND
PROPOSED TRANSFER STATION
WHEEL GUARD POSTS (TYP)
LIMIT OF GEOFABRIC UNDERLAY
LIMIT OF GEOFABRIC OVERLAY
INV. IN = 106.75
NEMA TYPE 4X JUNCTION BOX FOR "HIGH WATER LEVEL" LOCATED IN HOLDING TANK.
CONC. PAD
RIGID STEEL TO SCHEDULE 40 PVC COUPLINGS AT ALL ROAD CROSSINGS (TYP.)
HOLDING TANK
VENT
LP-15
LP-2
LEACHING PIT
2000 GALLON FRP FUEL TANK
4" C.I.
3/4"G. 2#4 & 1#8 FUEL TANK MONITOR FROM LEAK DETECTOR
FUEL FILL AT GRADE
FUEL STATION
SEPTIC TANK
CAP COD BERM
T/F
4" PVC
INV. OUT = 106.00
RESERVE AREA
C.O. #1
TRANSFORMER PAD
EDGE OF PAVEMENT
LIMIT OF WORK
CONC COLLAR
C.I.
PVC TO C.I. ADAPTOR BOOT
PVC PIPE
TYPICAL CLEAN-OUT DETAIL
N.T.S.
PLAN
SCALE: 1"=20'
PLAN OF RAILROAD BASELINE
SCALE: 1" = 50'
P.I. Sta 0+00 SPUR TRACK "B"
P.C. Sta 0+83
P.T. Sta 2+80
P.C. Sta 4+21.89
547°38'48"E
527°13'26"E
AS-BUILT
C-3

SEA CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions
AS-BUILT REVISIONS 10-31-89
ELECTRICAL UPDATE/CLEANOUT DETAIL

Scale AS SHOWN
Date OCT 1987
Job no. 604.878
Designed by CNS/DFR
Drawn by JCP
Checked by MG
Sheet C-3
Approved by

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
LAYOUT PLAN
File No.

MAKEPEACE

LIMIT OF WORK

GEOFABRIC LAYER OVERLAY

GEOFABRIC LAYER UNDERLAY

LIMITS OF FLANGEWAY ROAD CROSSING, GUARD SYSTEM & RAILROAD TIE REPLACEMENT

MATCH LINE SEE SHEET C-2

LIMIT OF CONC BARRIERS

12" CMP

12" CMP

SMH

SMH

LIMIT OF WORK

RIP-RAP SLOPE SEE SPECS.

B-1

B-2

B-4

B-8

A C-6

B C-6

PLAN

SCALE: 1"=20'

AS-BUILT

OVERLAY - FALMOUTH T.S. C-4

C-4

SEA CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions

Scale 1"=20'
Date Oct. 1987
Job no. 506.87.12
Designed by DAB/PFR
Drawn by JCP
Checked by MG
Approved by
Sheet C-4

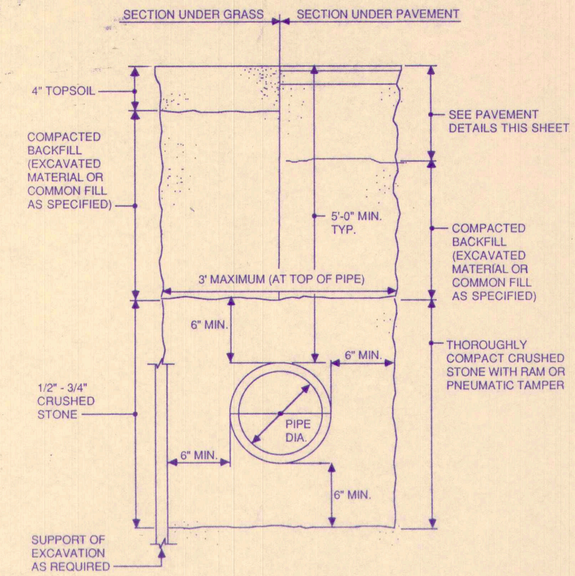
UPPER CAPE REGIONAL TRANSFER STATION

FALMOUTH, MASSACHUSETTS

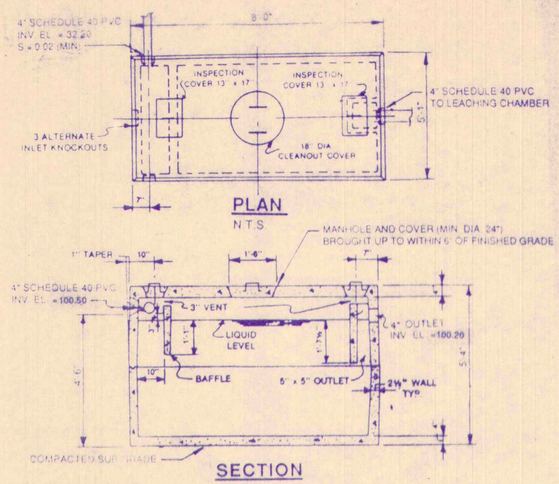
GRADING PLAN

File No.

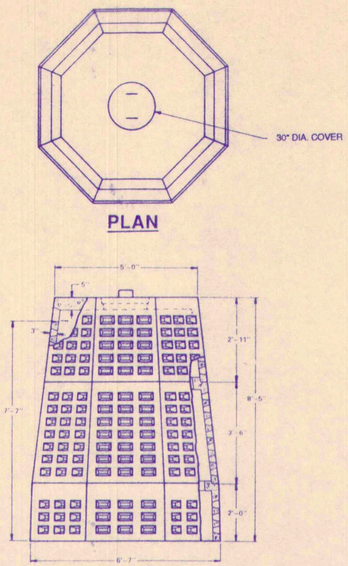
MAKEPEACE



TYPICAL TRENCH DETAIL
N.T.S.



PRE-CAST SEPTIC TANK
N.T.S.
(1000 GALLON)

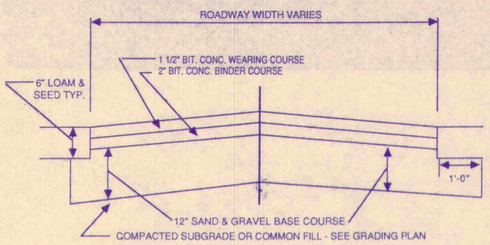


LEACHING PIT
NTS

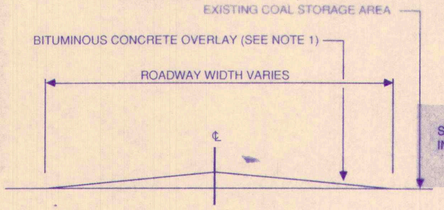
DESIGN DATA
1. ESTIMATED HYDRAULIC LOADING
   ALLOW 5 EMPLOYEES AT 15 GPD/EMPLOYEE = 75 GPD
2. SEPTIC TANK SIZE
   AVERAGE DAILY FLOW = 75 GPD X 150% = 125 GALLONS
   SEPTIC TANK PROVIDED = 1,000 GALLONS
3. DESIGN PERCOLATION RATE = 2 MINUTES PER INCH
   SIDEWALL LOADING = 2.5 SF/GALLON (TITLE 5)
   BOTTOM LOADING = 1.0 SF/GALLON (TITLE 5)
4. PROVIDED LEACHING AREA - LOADING RATE
   SIDEWALL AREA LOADING = 588 GPD
   BOTTOM AREA LOADING = 79 GPD
   TOTAL VOLUME PROVIDED = 667 GALLONS

SCHEDULE OF ELEVATIONS	ELEVATION	FINISHED GRADE ABOVE STRUCTURE
INVERT OF PIPE AT FOUNDATION	118.00	122.00
	117.00	122.00
	105.00	111.25
	101.00	106.00
INVERT AT SEPTIC TANK INLET	100.50	106.00
INVERT AT SEPTIC TANK OUTLET	100.20	106.00
INVERT AT LEACHING CHAMBER	99.70	106.00

SEPTIC TANK/LEACHING PIT NOTES:
1. FINISHED GRADING SHALL BE DONE IN ACCORDANCE WITH SITE PLAN.
2. PERCOLATION TESTS PERFORMED IN ACCORDANCE WITH THE INSTRUCTIONS IN TITLE 5 OF THE MASSACHUSETTS STATE ENVIRONMENTAL CODE AS LISTED UNDER SOIL TEST DATA ABOVE.
3. ALL CONSTRUCTION SHALL CONFORM TO TITLE 5 OF THE MASSACHUSETTS STATE ENVIRONMENTAL CODE, AND THE BOARD OF HEALTH REQUIREMENTS FOR THE TOWN OF FALMOUTH.
4. ALL TOPSOIL, SUBSOIL AND DELETERIOUS MATERIAL, IF ANY, SHALL BE EXCAVATED AND REMOVED FROM ALL AREAS BELOW THE LEACHING FACILITY AND TO A DISTANCE OF 10 FEET FROM ALL SIDES OF THE LEACHING FACILITY. FILL MATERIAL SHOULD BE CLEAN COARSE WASHED SAND OR OTHER GRANULAR MATERIAL, FREE FROM FINES, CLAY, ORGANIC MATTER AND LARGE BOULDERS, HAVING A PERCOLATION RATE IN ITS ORIGINAL LOCATION AND AFTER PLACEMENT OF 2 MINUTES PER INCH OR FASTER.
5. THE STONE AROUND THE LEACHING CHAMBER SHALL CONSIST OF WASHED STONE FREE OF IRON, FINES AND DUST IN PLACE. AT LEAST 2.0 FEET OF 3/4 TO 1-1/2 INCH STONE SHALL BE PLACED AROUND THE OUTSIDE OF THE PRE-CAST UNIT AND SHALL EXTEND AT LEAST TO THE TOP OF THE INLET PIPE. THE STONE SHALL BE COVERED WITH AT LEAST A 2 INCH LAYER OF WASHED STONE RANGING FROM 1/8 TO 1/2 INCH IN SIZE. ALL STONE MUST HAVE LESS THAN 0.3 PERCENT MATERIAL FINER THAN A NUMBER 200 SIEVE AS DETERMINED BY THE AASHTO TEST METHODS T-1 AND T-27 (LATEST EDITION). THE CONTRACTOR SHALL PROVIDE A GRAIN SIZE ANALYSIS TO THE ENGINEER PRIOR TO PLACEMENT OF THE STONE.
6. THE MINIMUM DEPTH OF COVER MATERIAL SHALL BE 12 INCHES. EARTH MATERIALS USED TO COVER LEACHING SYSTEMS SHALL BE FREE OF STUMPS, OR WASTE CONSTRUCTION MATERIAL. MACHINERY WHICH MAY CRUSH OR DISTURB THE ALIGNMENT OF PIPE IN THE DISPOSAL SYSTEM SHALL NOT BE ALLOWED ON ANY PART OF THE DISPOSAL AREA. FINISHED SURFACE SHALL BY LOAMED (4 INCH MINIMUM) AND SEEDED, AND MAINTAINED UNTIL GRASS IS ESTABLISHED. THE TOP OF EACH LEACHING PIT SHALL BE HAND TAMPED AND OVERFILLED WITH 4 TO 6 INCHES OF LOAM TO ALLOW FOR SETTLEMENT.
7. SOLID PVC PIPE AND FITTINGS SHALL BE TIGHT JOINTED SCHEDULE 40.
8. OPEN EXCAVATION SHALL BE PROTECTED DURING CONSTRUCTION WITH HAY BALES AND / OR SILT FENCING TO PREVENT SURFACE RUNOFF, SILT, AND DEBRIS FROM ENTERING THE EXCAVATION.
9. THE BOTTOM OF THE LEACHING PIT SHALL BE LEVEL.
10. HEAVY MACHINERY SHALL NOT BE PERMITTED TO PASS OVER THE LEACHING FACILITY.
11. THE BOARD OF HEALTH SHALL REQUIRE INSPECTION OF ALL CONSTRUCTION BY THE DESIGN ENGINEER OR BY AN AGENT OF THE BOARD OF HEALTH, AND REQUIRE SUCH PERSON TO CERTIFY IN WRITING THAT ALL WORK HAS BEEN COMPLETED IN ACCORDANCE WITH THE TERMS OF THE PERMIT AND THE APPROVED PLANS.
12. NO PERMANANT STRUCTURE MAY BE CONSTRUCTED OVER THE LEACHING FACILITY.
13. FOR PROPER PERFORMANCE, SEPTIC TANK SHOULD BE INSPECTED AT LEAST ONCE A YEAR AND PUMPED WHEN THE TOTAL DEPTH OF SCUM AND SOLIDS EXCEEDS 1/3 THE LIQUID DEPTH OF THE TANK.
14. TEST PIT AND PERCOLATION TEST LOCATIONS, ELEVATIONS, AND LOGS PERFORMED BY S E A CONSULTANTS INC.
15. SEPTIC SYSTEM DESIGN WAS BASED ON SUBSURFACE SOIL AND GROUNDWATER CONDITIONS OBSERVED AT THE TEST PIT LOCATIONS ONLY. CONDITIONS MAY VARY AT LOCATIONS NOT INVESTIGATED BY TEST PITS, OR, IN THE CASE OF GROUNDWATER LEVELS, WITH SEASONAL FLUCTUATIONS. SHOULD THIS BECOME EVIDENT DURING CONSTRUCTION, THE ENGINEER NEEDS TO BE NOTIFIED AS A RE-EVALUATION OF THE DESIGN MAY BE NECESSARY.
16. PRECAST SEPTIC TANK SHALL BE MODEL # ST1000, AS MANUFACTURED BY ROTONDO & SONS, INC. OR APPROVED EQUAL.
17. PRECAST LEACHING PIT SHALL BE MODEL # DW8 AS MANUFACTURED BY ROTONDO & SONS INC. OR APPROVED EQUAL.

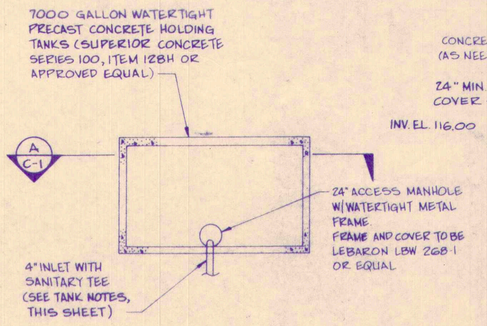


TYPICAL ROADWAY CROSS SECTION
N.T.S.



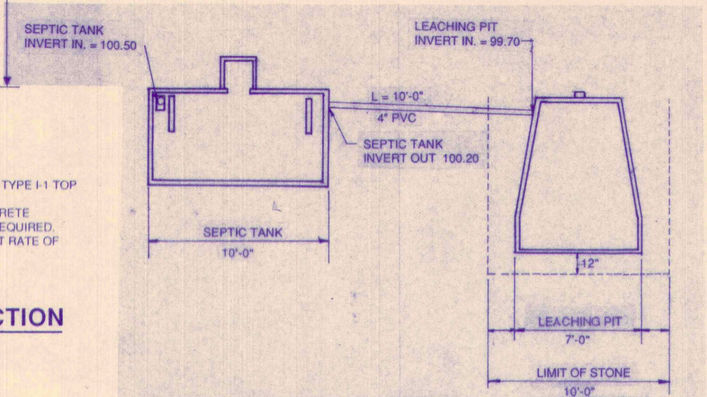
TYPICAL 2" OVERLAY CROSS SECTION
N.T.S.

NOTE:
1. BITUMINOUS CONCRETE OVERLAY:
   - SURFACE COURSE: 1-1/2" CLASS I BITUMINOUS CONCRETE PAVEMENT TYPE I-1 TOP COURSE MATERIAL PLACED IN ONE LAYER.
   - LEVELLING COURSE: VARIABLE THICKNESS CLASS I BITUMINOUS CONCRETE PAVEMENT TYPE I-1 (TOP COURSE MATERIAL) AS REQUIRED.
   - PRIME COAT: PRIMECOAT ON EXISTING BITUMINOUS SURFACE AT RATE OF 1/20 GALLONS PER SQUARE YARD.

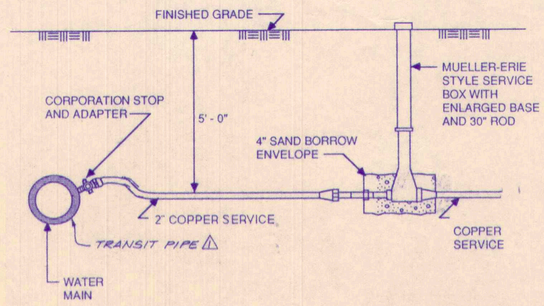


GENERAL NOTES:
1. HOLDING TANK TO HAVE LEVEL ALARM FLOAT SWITCH ATTACHED TO WALL BENEATH MANHOLE COVER FOR EASY ACCESS.

HOLDING TANK DETAIL
N.T.S.



LEACHING PIT AND SEPTIC TANK - CROSS SECTION
SCALE: V= 1"= 4'-0"
H = 1"= 4'-0"



WATER SERVICE CONNECTION
N.T.S.

AS-BUILT

C-5

S E A CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

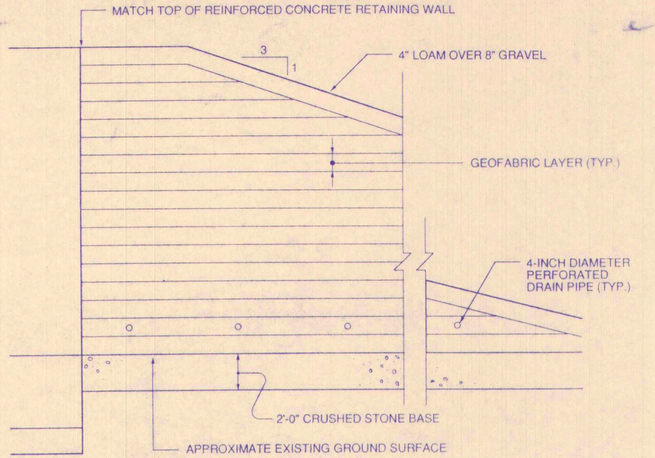
Revisions
10-31-89 AS-BUILT REVISIONS

Scale AS SHOWN
Date OCT. 1987
Job no. 506-87.12
Designed by PFZ
Drawn by JCS
Checked by MG
Approved by
Sheet C-5

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
DETAILS

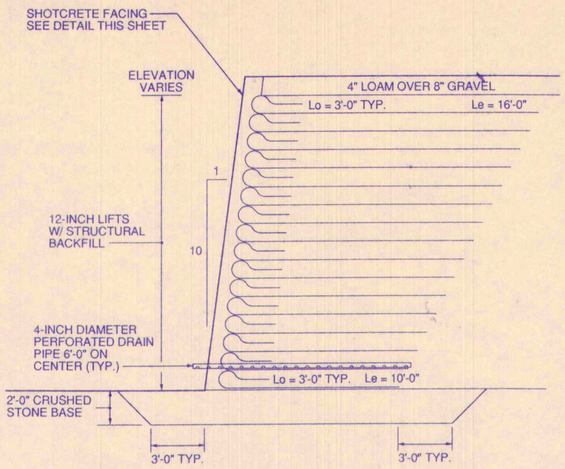
File No.

191193
MAKEPEACE



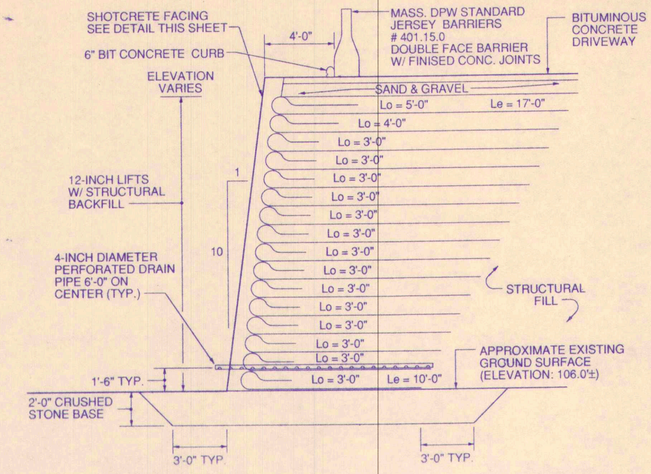
PROFILE VIEW ALONG WESTERLY WALL FACE

N.T.S.



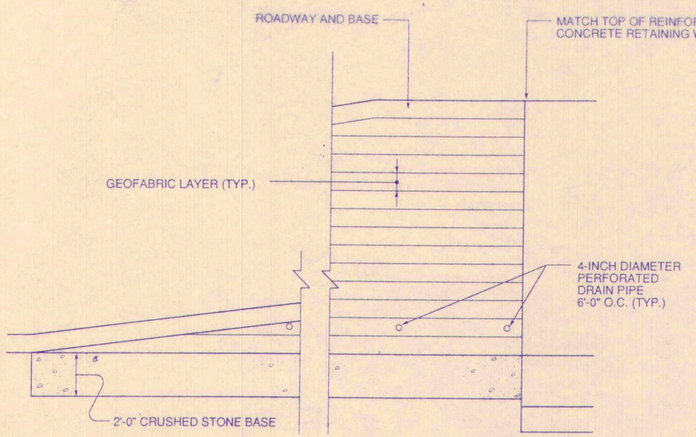
SECTION A-A (SHEET C-4)

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



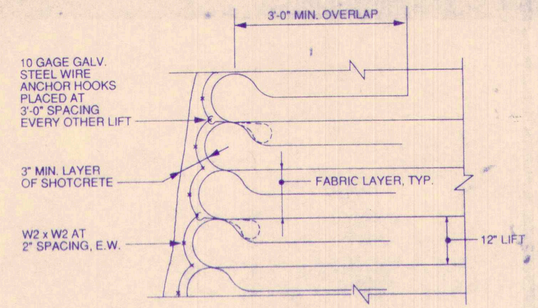
SECTION B-B (SHEET C-4)

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



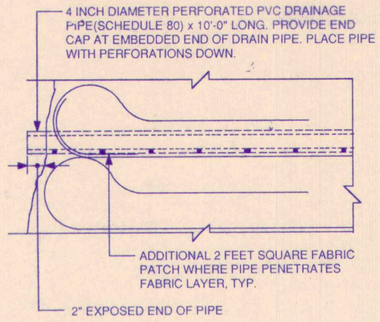
PROFILE VIEW ALONG EASTERLY WALL FACE

N.T.S.



DETAIL OF FACE SHOTCRETE FACE TREATMENT

N.T.S.

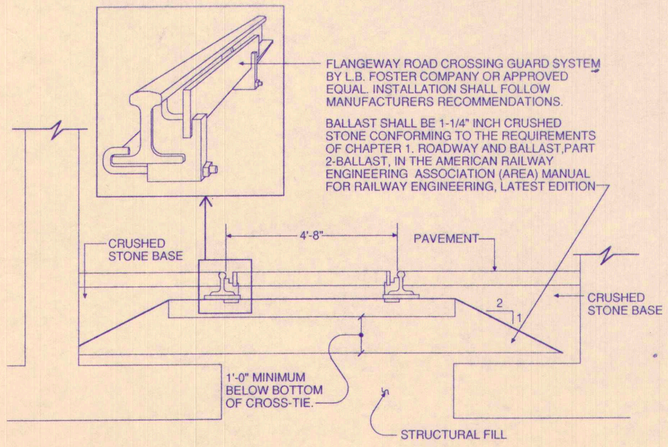


NOTES:

1. TO PASS DRAINAGE PIPE THROUGH FABRIC, MAKE 3 INCH PERPENDICULAR CROSS CUTS IN FABRIC AND PUSH DRAINAGE PIPE THROUGH CUTS FOR SNUG FIT.
2. SLOPE DRAINAGE PIPE AT 1 INCH IN 10 FEET DOWNWARD TOWARD WALL FACE.

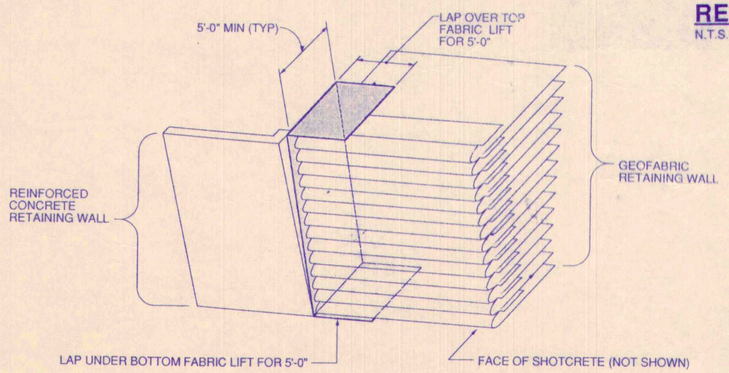
RETAINING WALL

N.T.S.



SECTION THROUGH RAIL / DRIVEWAY IN BUILDING

SCALE: 1/2" = 1' - 0"



NOTE:
TYPICAL BOTH SIDES OF REINFORCED CONCRETE RETAINING WALL - GEOFABRIC RETAINING WALL INTERFACE

REINFORCED CONCRETE RETAINING WALL/ GEOFABRIC RETAINING WALL INTERFACE

N.T.S.

NOTES FOR FABRIC RETAINING WALLS:

1. MINIMUM EMBEDMENT LENGTHS OF FABRIC SHALL VARY LINEARLY BETWEEN THE BOTTOM AND TOP LIFT EMBEDMENT LENGTHS INDICATED ON THE FABRIC RETAINING WALL SECTIONS.
2. THE TOP OF WALL VARIES LINEARLY BETWEEN ELEVATIONS 122 AND 106 TO ACHIEVE THE REQUIRED GRADING, REDUCE THE LIFT LAYER THICKNESS AND ELIMINATE 12-INCH LIFT LAYERS AS DIRECTED BY THE ENGINEER.
3. PROVIDE SCHEDULE 80, PERFORATED PVC DRAINAGE PIPE AT 6 FOOT SPACINGS ALONG SECTION OF WALL AS INDICATED. DURING SHOTCRETE OPERATIONS, COVER EXPOSED END OF PVC PIPE TO PREVENT BLOCKAGE. PLACE PIPE WITH PERFORATIONS DOWN.
4. THE FABRIC MATERIAL SHALL BE NON-WOVEN INTO A WIDTH NOT LESS THAN 12 FEET AND SHALL BE FACTORY SEWN INTO 20 FOOT MINIMUM WIDTHS. THE MINIMUM HORIZONTAL FABRIC OVERLAP SHALL BE 3 FEET AND SHALL BE FIELD SEWN.
5. THE CONTRACTOR SHALL USE A BATTERED BOARD FORM OR ALTERNATE SYSTEM TO ACHIEVE THE BATTER OF 10 VERTICAL TO 1 HORIZONTAL.
6. THE FABRIC MATERIAL SHALL BE PLACED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS SPECIFIED. TORN OR PUNCTURED FABRIC SHALL NOT BE USED AND FABRIC WHICH BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
7. THE FABRIC MATERIAL SHALL NOT BE EXPOSED MORE THAN 30 DAYS TO SUNLIGHT, UNLESS SPECIFICALLY AUTHORIZED IN WRITING BY THE ENGINEER. PLACE SHOTCRETE FACING AS REQUIRED TO PROTECT FABRIC.
8. COMPACT SUBGRADE SOILS PRIOR TO BACKFILLING.
9. PLACE LIFT LAYERS TO THICKNESS INDICATED AND SPECIFIED. STRUCTURAL BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1557, METHOD D. PERCENT COMPACTION SHALL BE DEFINED AS THE RATIO OF THE FIELD DRY DENSITY AS DETERMINED BY ASTM D 1556 TO THE MAXIMUM DRY DENSITY DETERMINED BY ASTM D 1557.
10. THE CONTRACTOR SHALL ALLOW THE GEOFABRIC WALL TO SETTLE 21 DAYS FOLLOWING COMPLETION OF THE WALL PRIOR TO PLACEMENT OF THE SHOTCRETE FACING.
11. AS SHOWN IN SECTION A-A AND SECTION B-B, Lo IS THE MINIMUM OVERLAP LENGTH REQUIRED FOR EACH FABRIC LAYER, AND Le IS THE MINIMUM EMBEDMENT LENGTH REQUIRED FOR EACH FABRIC LAYER.

AS- BUILT

C-6

S E A CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions

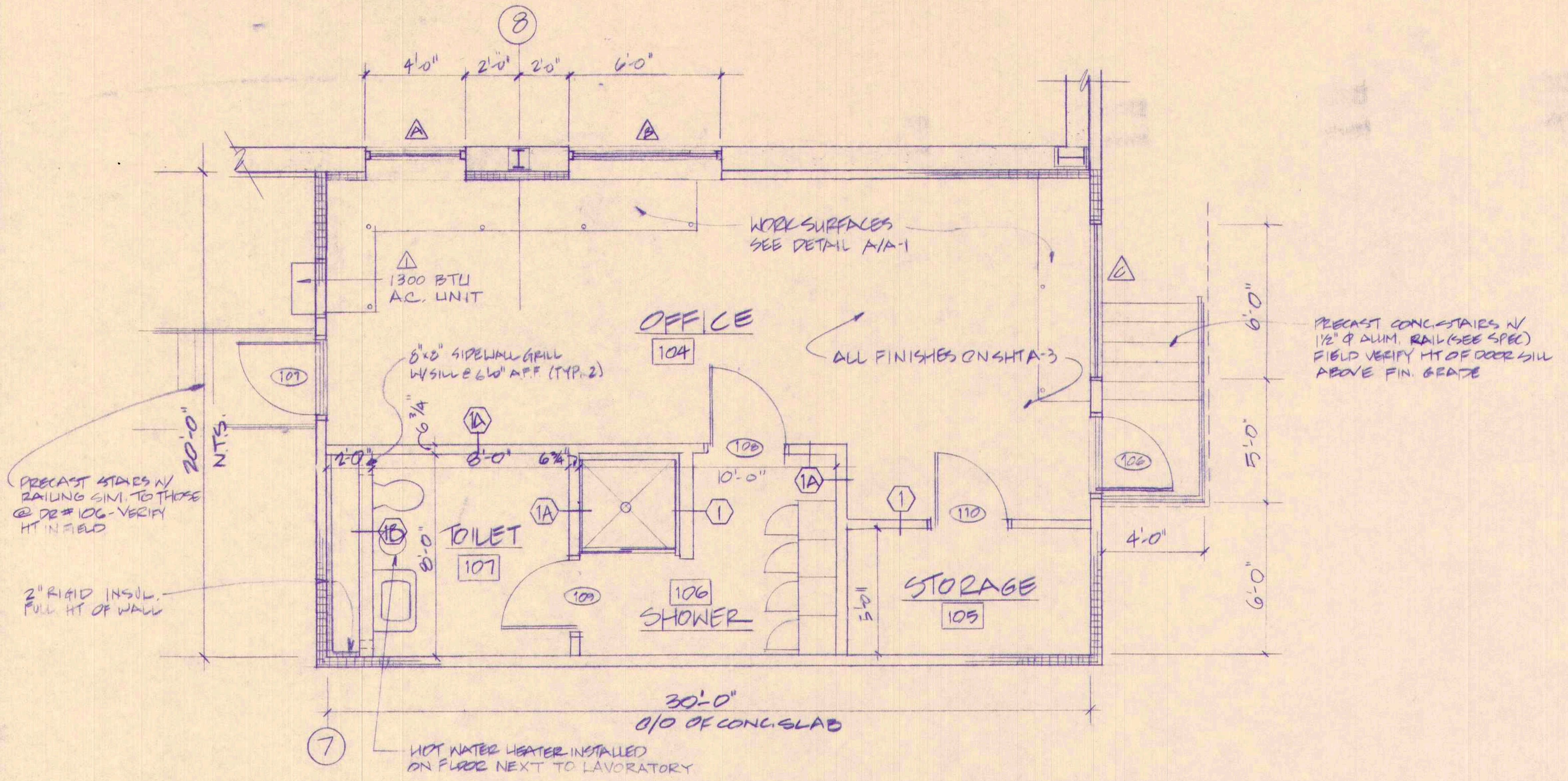
Scale	AS SHOWN
Date	OCT. 1987
Job no.	506-87.2
Designed by	DAB/PFR
Drawn by	JCP
Checked by	MG
Sheet	C-6
Approved by	

UPPER CAPE REGIONAL TRANSFER STATION

FALMOUTH, MASSACHUSETTS

WALL SECTIONS & DETAILS

File No.



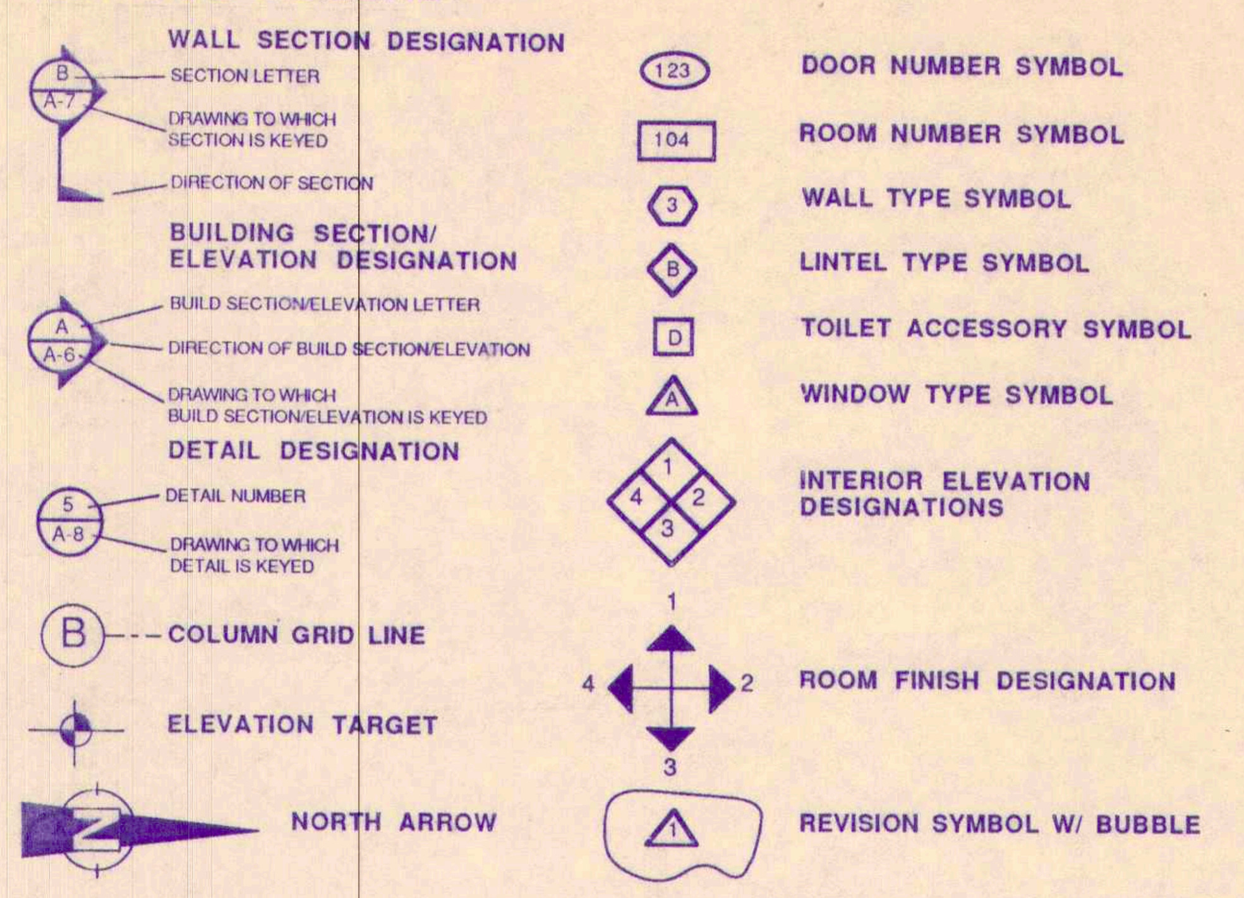
OFFICE PART PLAN

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

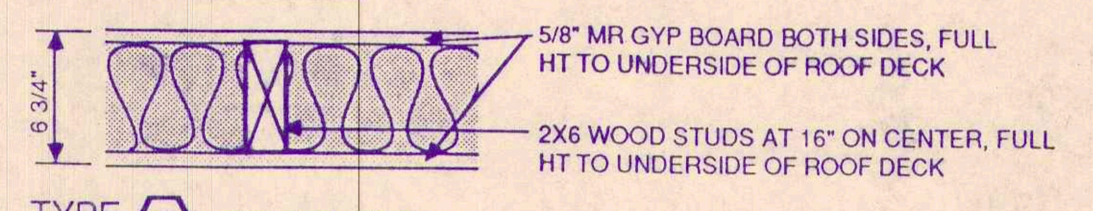
LIST OF ABBREVIATIONS:

ABI	ADDITIVE BID ITEM
A/C	AIR CONDITIONING
AFF	ABOVE FINISH FLOOR
ALUM	ALUMINUM
ARCH	ARCHITECTURAL
A.T.	ACOUSTIC TILE
ATC	ACOUSTICAL TILE CEILING
BD	BOARD
BLDG	BUILDING
BLKG	BLOCKING
BRK	BRICK
BOT	BOTTOM
BOT/	BOTTOM OF
CCB	CERAMIC COVE BASE
CER	CERAMIC
℄	CENTER LINE
C.J.	CONTROL JOINT
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CPT	CARPET
CRS	COURSE
CT	CERAMIC TILE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DWG	DRAWING
EA	EACH
E.J.	EXPANSION JOINT
EL	ELEVATION
ELEV	ELEVATOR
ELEC	ELECTRICAL
EPX	EPOXY PAINT
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST.	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F.D.	FLOOR DRAIN
FG	FIBERGLASS
FIN	FINISH
FL	FLOOR
FLUOR	FLUORESCENT
FR	FIRE RATED
GA	GAUGE
GALV	GALVANIZED
GL	GLASS
GR	GRADE
GRAN.	GRANITE
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
HAR	CONCRETE HARDENER
HC	HOLLOW CORE
H.C.	HANDICAPPED
HM	HOLLOW METAL
H.P.	HIGH POINT
HT	HEIGHT
HR	HOUR
INSUL	IINSULATION
JST	JOIST
JT	JOINT
L.P.	LOW POINT
MACH	MACHINE
MAT	MATERIAL
MECH	MECHANICAL
MR	MOISTURE RESISTANT
M.O.	MASONRY OPENING
MTL	METAL
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
O.A.	OVER ALL
O.C.	ON CENTER
OPG	OPENING
OPP	OPPOSITE
P.B.	PARTICLE BOARD
PL	PLATE
PLUMB	PLUMBING
PLYWD	PLYWOOD
PRMR	PRIMER
PTD	PAINTED
Q.T.	QUARRY TILE
R	RISER
RAD	RADIUS
RCB	RUBBER COVE BASE
R.D.	ROOF DRAIN
REQ'D	REQUIRED
RM	ROOM
RSB	RUBBER STRAIGHT BASE
RTD	RATED
SC	SOLID CORE
SIM	SIMILAR
SHT	SHEET
SLR	SEALER
S.T.C.	SOUND TRANSMISSION COEFFICIENT
STL	STEEL
STRUCT.	STRUCTURAL
T	TREAD
TOP/	TOP OF
TYP.	TYPICAL
VCB	VINYL COVE BASE
VCT	VINYL COMPOSITION TILE
VNL	VINYL
VSB	VINYL STRAIGHT BASE
VWC	VINYL WALL COVER
W/	WITH
W/O	WITHOUT
WD	WOOD

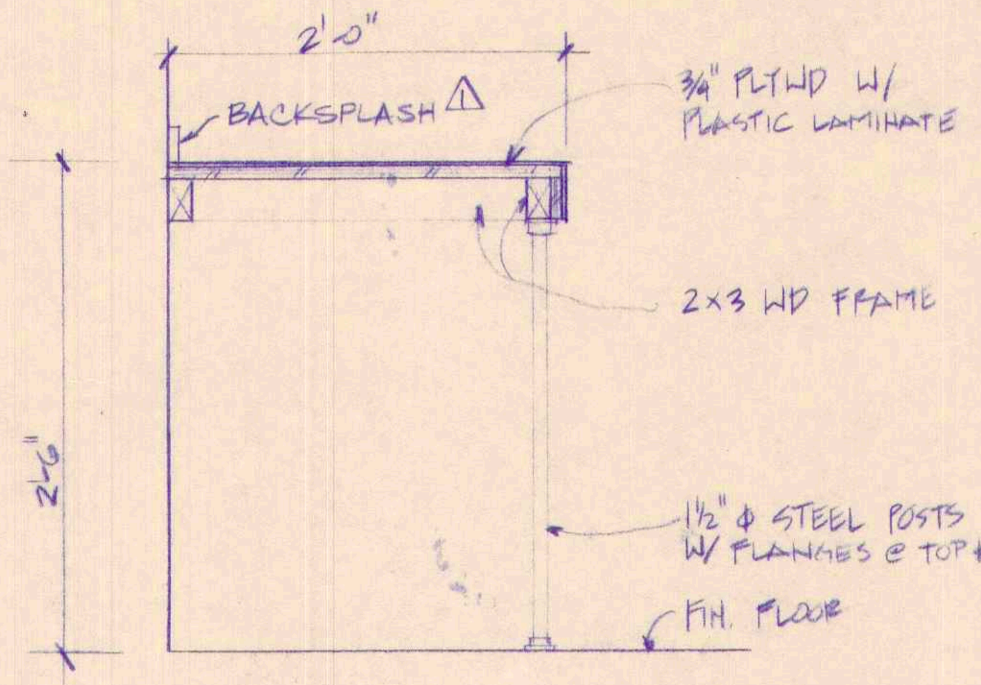
SYMBOL LEGEND:



WALL TYPES

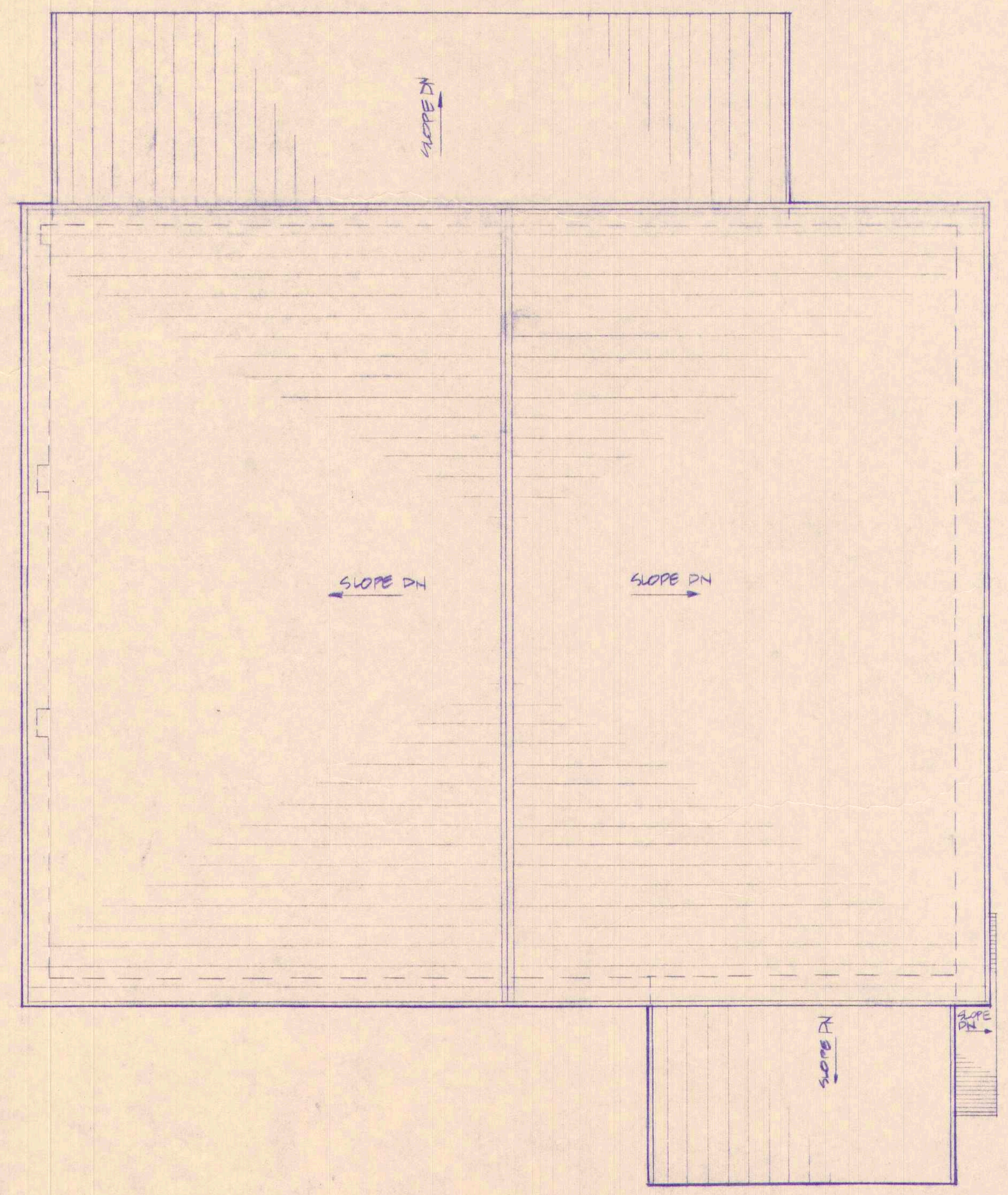


TYPE
1 NO INSULATION
1A PROVIDE 5 1/2" F.G. SOUND ATTEN. BATT BLANKET FULL HT
1B PROVIDE MR GYP BOARD INNER FACE ONLY (NO INSULATION), GYP BOARD TO 9'-6" AFF



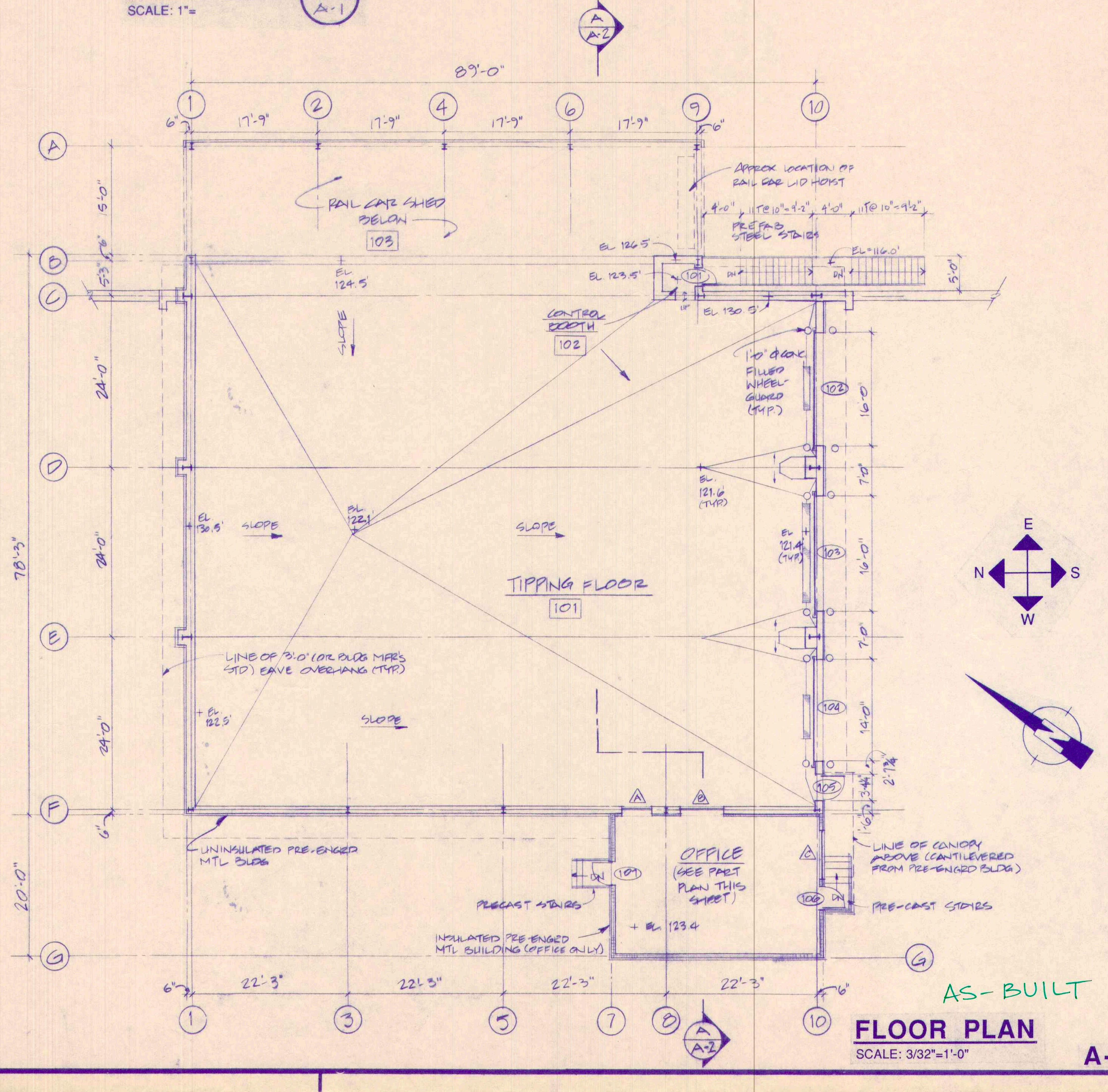
DETAIL

SCALE: 1"=



ROOF PLAN

SCALE: 3/32"=1'-0"



FLOOR PLAN

SCALE: 3/32"=1'-0"

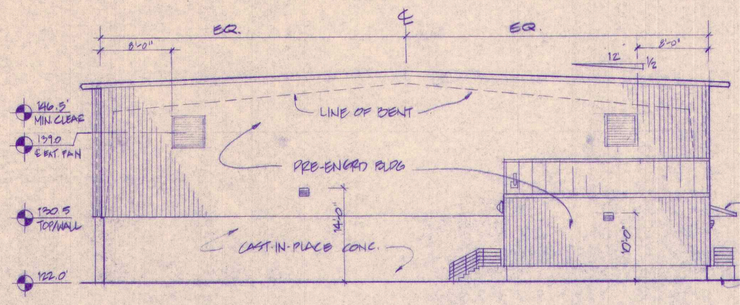
A-1

S E A CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts · South Portland, Maine · Wethersfield, Connecticut

Revisions		
1	AS BUILT REVISIONS	10-31-89

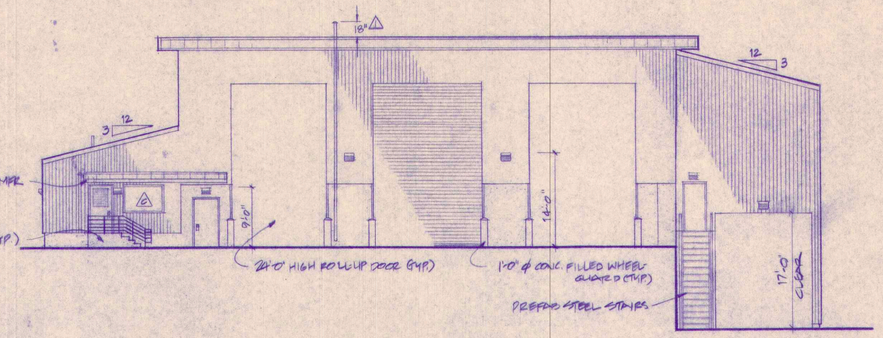
UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
FLOOR & ROOF PLANS, DETAILS, LEGEND, & ABBREVIATIONS

Scale AS NOTED
Date
Job no.
Designed by
Drawn by
Checked by
Sheet A-1
Approved by
File No.



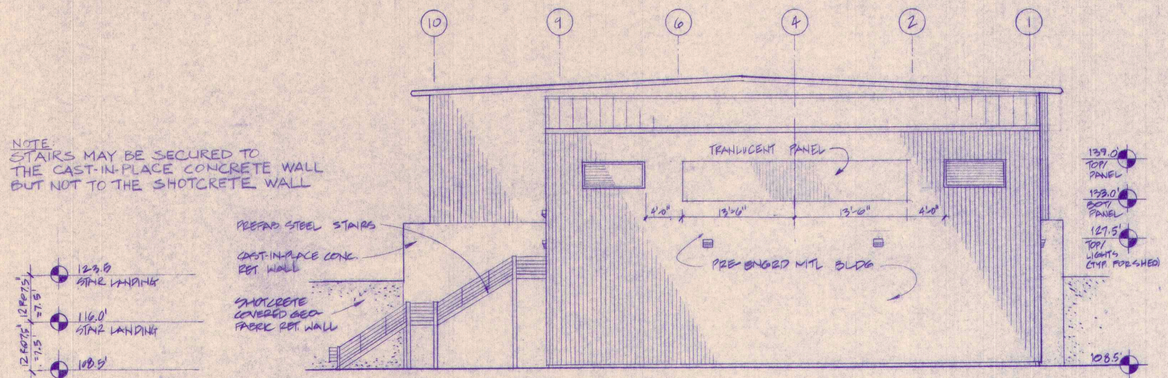
WEST ELEVATION

SCALE: 3/32"=1'-0"



SOUTH ELEVATION

SCALE: 3/32"=1'-0"



EAST ELEVATION

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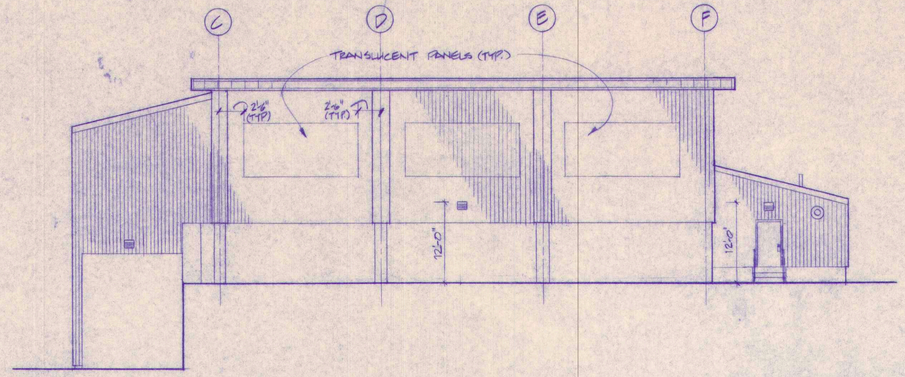
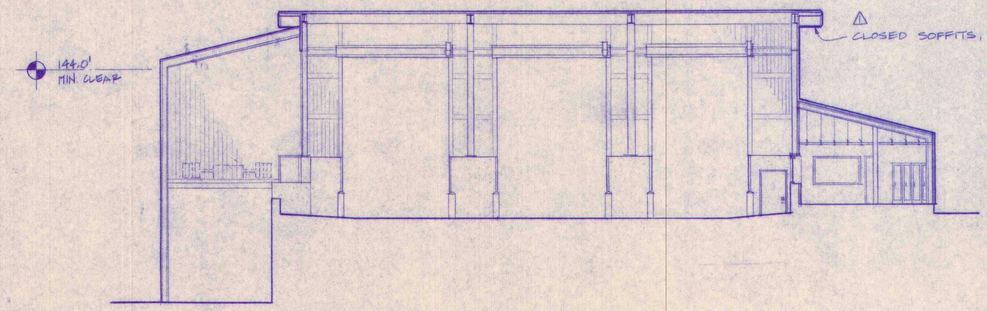


NORTH ELEVATION

SCALE: 3/32"=1'-0"



SECTION

SCALE: 3/32"=1'-0"

A / A1

AS-BUILT

A-2

S E A CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions
10-31-89 AS-BUILT REVISIONS

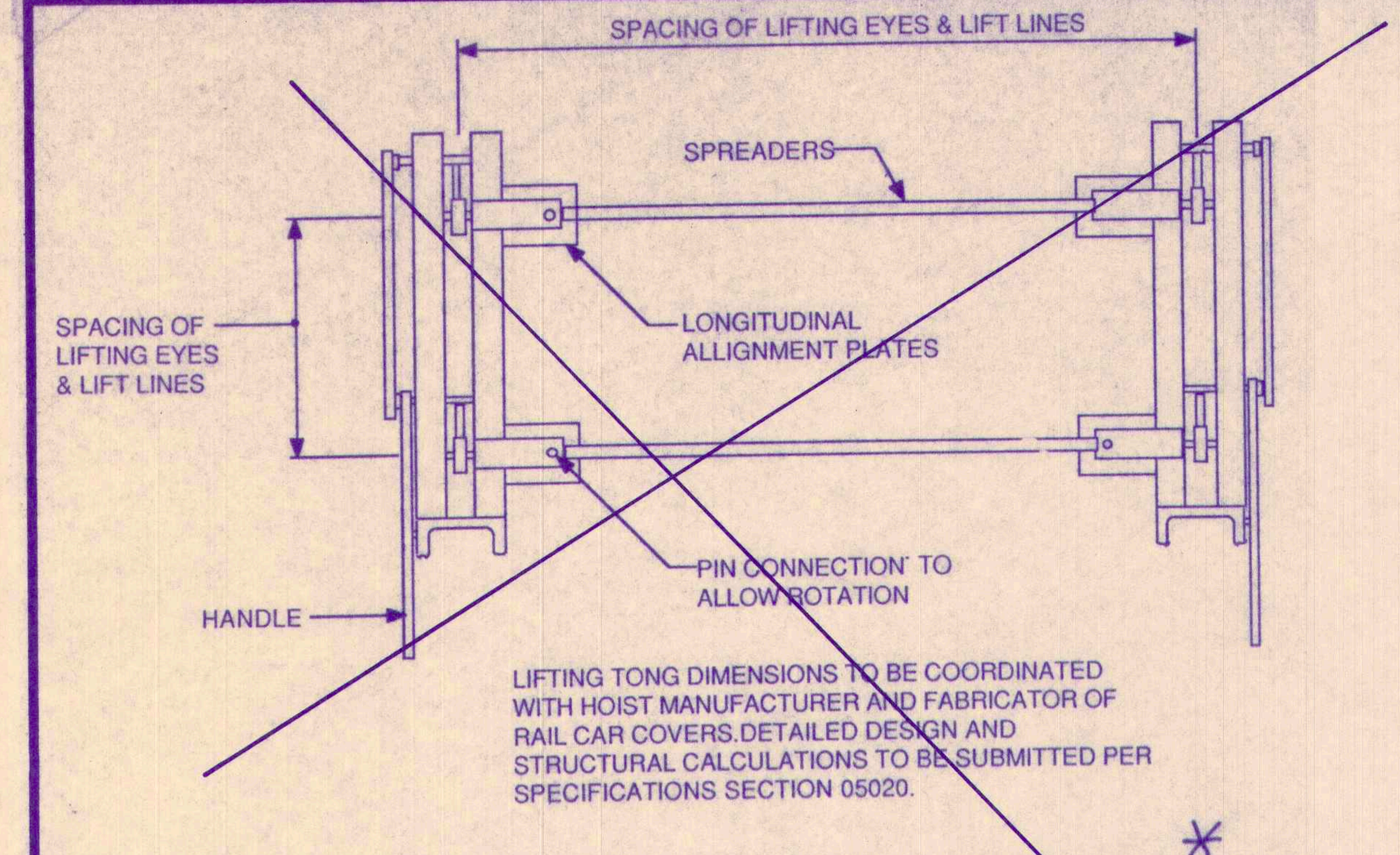
Scale As NOTED
Date
Job no. 806-8712
Designed by MED
Drawn by MED
Checked by
Sheet A-2

Approved by

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
ELEVATIONS & SECTIONS

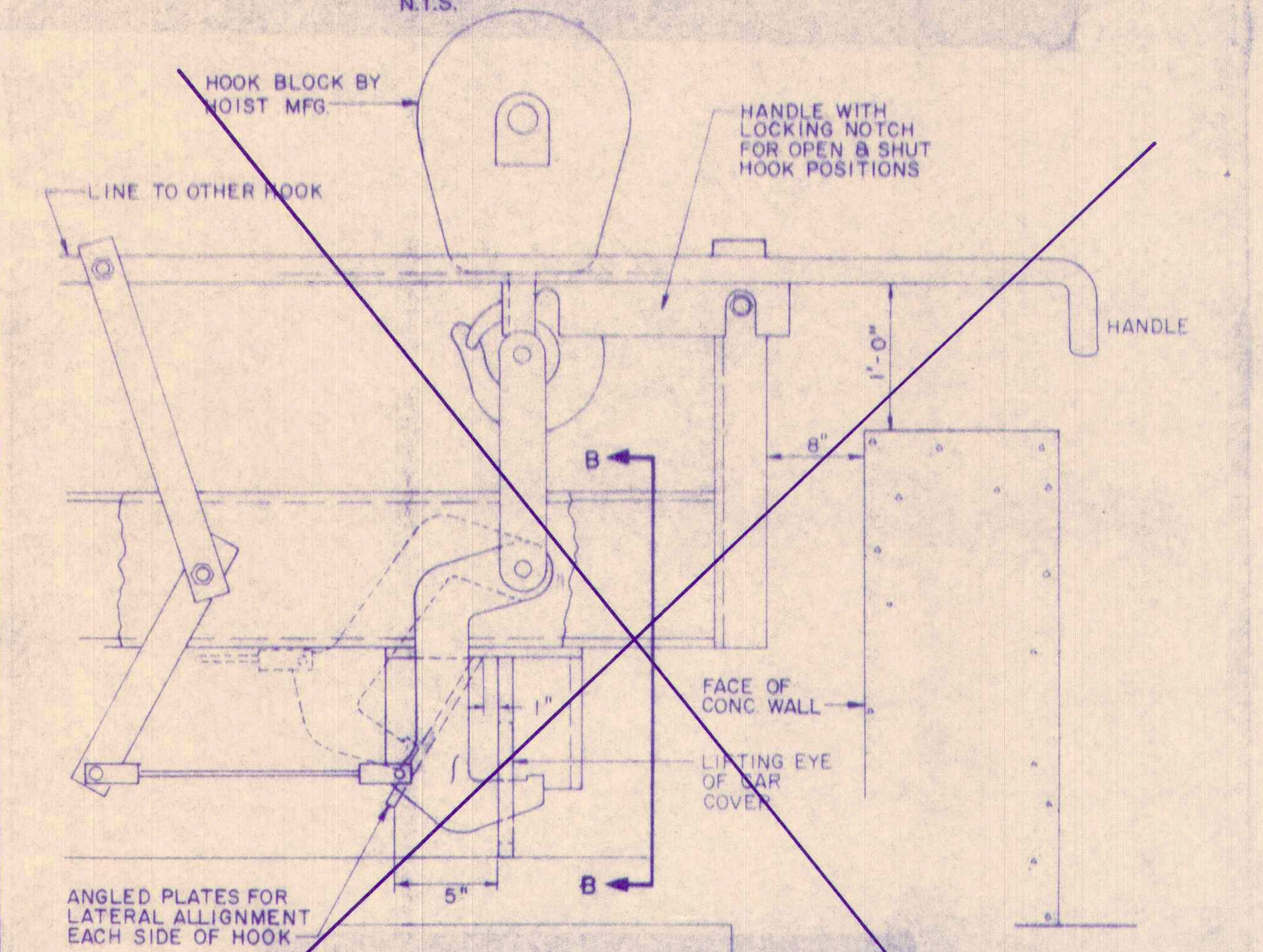
File No.

MAKEPEACE



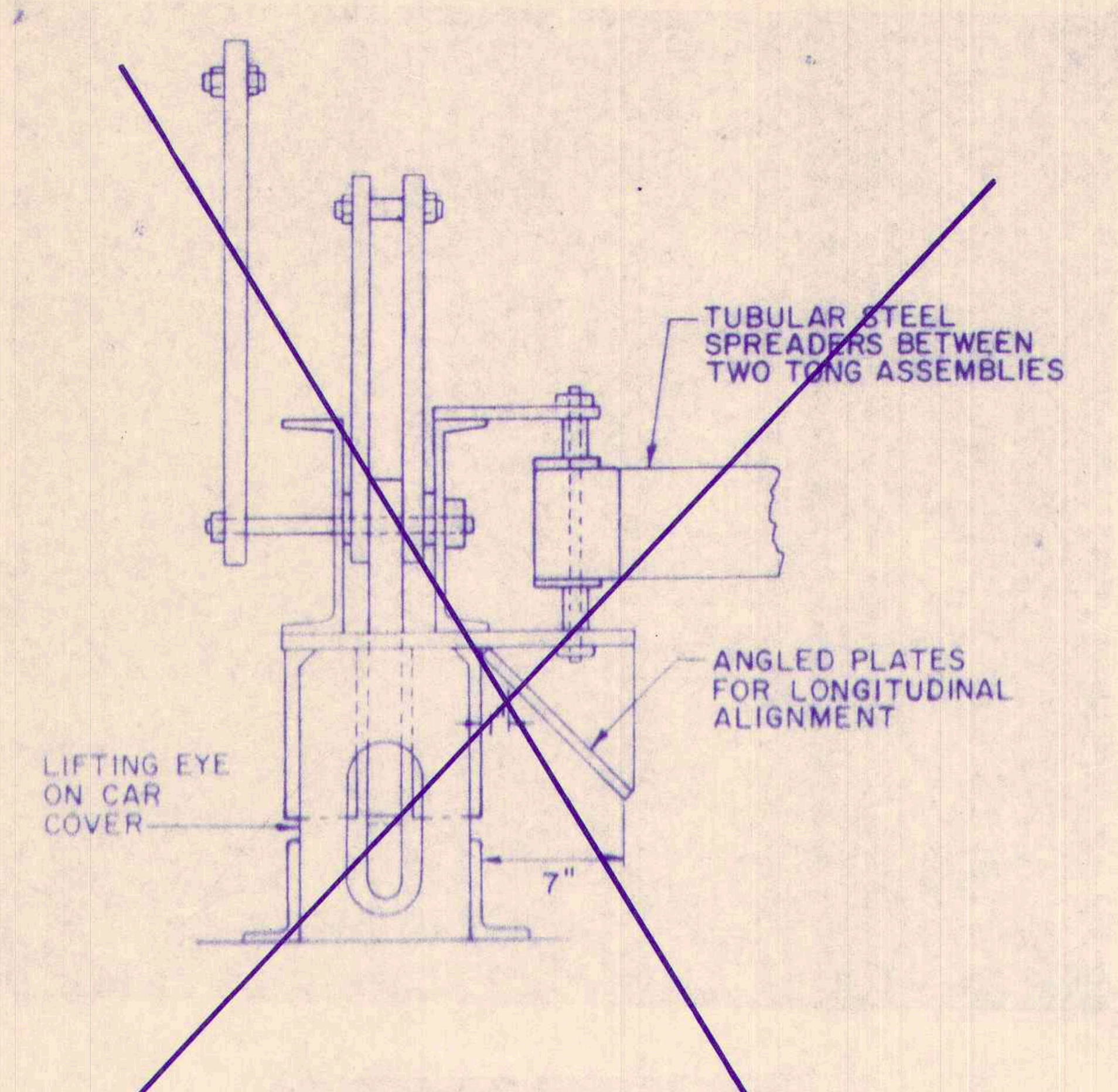
PLAN VIEW OF LIFTING TONG ASSEMBLY *

N.T.S.



ELEVATION VIEW OF LIFTING TONG ASSEMBLY *

N.T.S.



SECTION B-B *

N.T.S.

FINISH SCHEDULE

ROOM		FLOOR		BASE		WALLS								CEILING		REMARKS
						EAST		WEST		SOUTH		NORTH				
NO.	NAME	MAT.	FIN.	MAT.	HT.	SURF.	FIN.	SURF.	FIN.	SURF.	FIN.	SURF.	FIN.	MAT.	HT.	
101	TIPPING FLOOR	CONC	HAR			MTL		MTL		MTL		MTL				FACTORY FIN. ALL MTL
102	CONTROL BOOTH	CONC	HAR			CONC		CONC		CONC		CONC				
103	RAIL CAR SHED	CONC	HAR			MTL		MTL		MTL		MTL				FACTORY FIN. ALL MTL
104	OFFICE	CONC	VCT	VNL	4"	ALUM		GWB	PTD	ALUM		ALUM		ATC	9'-0"	FACTORY FIN. ALL ALUM
105	STORAGE	CONC	VCT	VNL	4"	GWB	PTD	ALUM		ALUM		GWB	PTD	ATC	9'-0"	FACTORY FIN. ALL ALUM
106	SHOWER	CONC	VCT	VNL	4"	GWB	PTD	ALUM		GWB	PTD	GWB	PTD	ATC	9'-0"	FACTORY FIN. ALL ALUM
107	TOILET	CONC	VCT	VNL	4"	GWB	PTD	ALUM		GWB	PTD	GWB	PTD	ATC	9'-0"	FACTORY FIN. ALL ALUM

WINDOW SCHEDULE

WINDOW								GLAZING	REMARKS
TYPE	SIZE WIDTH	HEIGHT	SILL AFF	MAT.	HEAD DET.	JAMB DET.	SILL DET.	MATERIAL	
A	4-0"	4'-0"	3'-0"	ALUM	H-5/*	J-5/6	S-5	INSUL/LEXAN	INSTALLED BY GC
B	6'-0"	4'-0"	3'-0"	ALUM	H-5/*	J-5/6	S-5	INSUL/LEXAN	INSTALLED BY GC
C	6'-0"	4'-0"	3'-0"	ALUM	*	*	*	INSUL/LAMINATED	BY BUILDING MFR

* INFORMATION SUPPLIED BY BLDG MFR WHERE WINDOWS ARE SUPPORTED BY PRE-ENGRD BLDG

TOILET ACCESSORIES SCHEDULE

MARK	ITEM	MOUNTING HT (AFF)	MFR # (1)	REMARKS
1	TOILET TISSUE DISPENSER	2'-4" TO TOP/ UNIT	B-388.60	
2	TOWEL DISPENSER & WASTE DISPOSAL	4'-4" TO TOP/ UNIT	B-369	
3	SOAP DISPENSER	3'-4" TO TOP/ UNIT	B-4063	
4	MIRROR	3'-6" TO BOT/ UNIT	B-292 1830	
5	LOCKERS (QUANTITY 4)	ON FLOOR		MFR: LYON - 18" X 18" X 72" STEEL LOCKERS

NOTE 1: MFR'S # SHOWN ARE BY BOBRICK WASHROOM EQUIPMENT, INC.

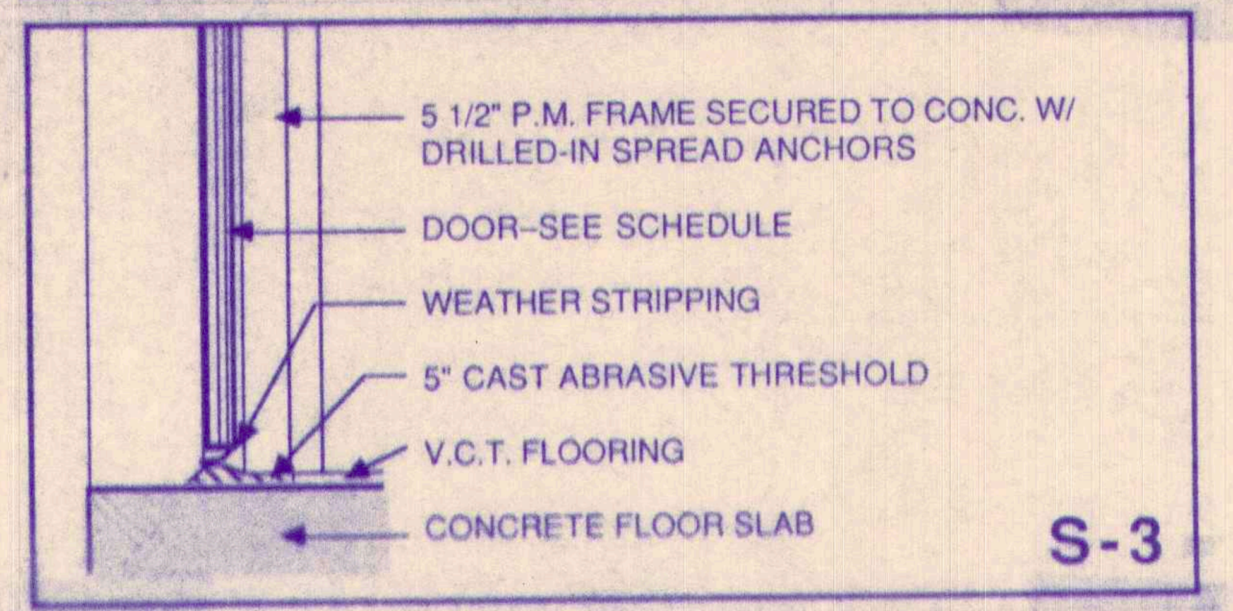
* SEE SHOP DRAWINGS (KEN COAL FABRICATORS) △1

DOOR SCHEDULE

DOOR									FRAME					HARDWARE								REMARKS
NO.	ROOM FROM	TO	SIZE W	H	T	TYPE	MAT.	INSUL	TYPE	MAT.	HEAD DET.	JAMB DET.	SILL DET.	LOCKS	PRIV	CLOSER	STOP	T'HOLD	KICK PL	PANIC	MOTOR	
101	102	EXT.	3'-0"	7'-0"	1-3/4"	3	HM			MTL	H-1/*	J-1/*	S-1	X		X			X	X		PROVIDED BY BLDG MFR
102	101	EXT.	16'-0"	24'-0"	*	1	MTL				H-2/*	J-2/*	S-2								X	PROVIDED BY BLDG MFR
103	101	EXT.	16'-0"	24'-0"	*	1	MTL				H-2/*	J-2/*	S-2								X	PROVIDED BY BLDG MFR
104	101	EXT.	14'-0"	24'-0"	*	1	MTL				H-2/*	J-2/*	S-2								X	PROVIDED BY BLDG MFR
105	101	EXT.	3'-0"	7'-0"	1-3/4"	2	HM				H-1	J-1	S-1	X		X			X	X		PROVIDED BY GC
106	104	EXT.	3'-0"	7'-0"	1-3/4"	3	HM	X			*	*	S-3	X		X	X	X	X	X		PROVIDED BY BLDG MFR
107	104	EXT.	3'-0"	7'-0"	1-3/4"	2	HM	X			*	*	S-3	X		X	X	X	X	X		PROVIDED BY BLDG MFR
108	106	104	3'-0"	7'-0"	1-3/4"	2	HM				H-4	J-4	S-4		X		X					PROVIDED BY GC
109	106	107	3'-0"	7'-0"	1-3/4"	2	HM				H-4	J-4	S-4		X		X					PROVIDED BY GC
110	105	104	3'-0"	7'-0"	1-3/4"	2	HM				H-4	J-4	S-4	X			X					PROVIDED BY GC

* INFORMATION SUPPLIED BY BLDG MFR WHERE DOORS ARE SUPPORTED BY PRE-ENGRD BLDG

NOTE: ALL HARDWARE BY GC



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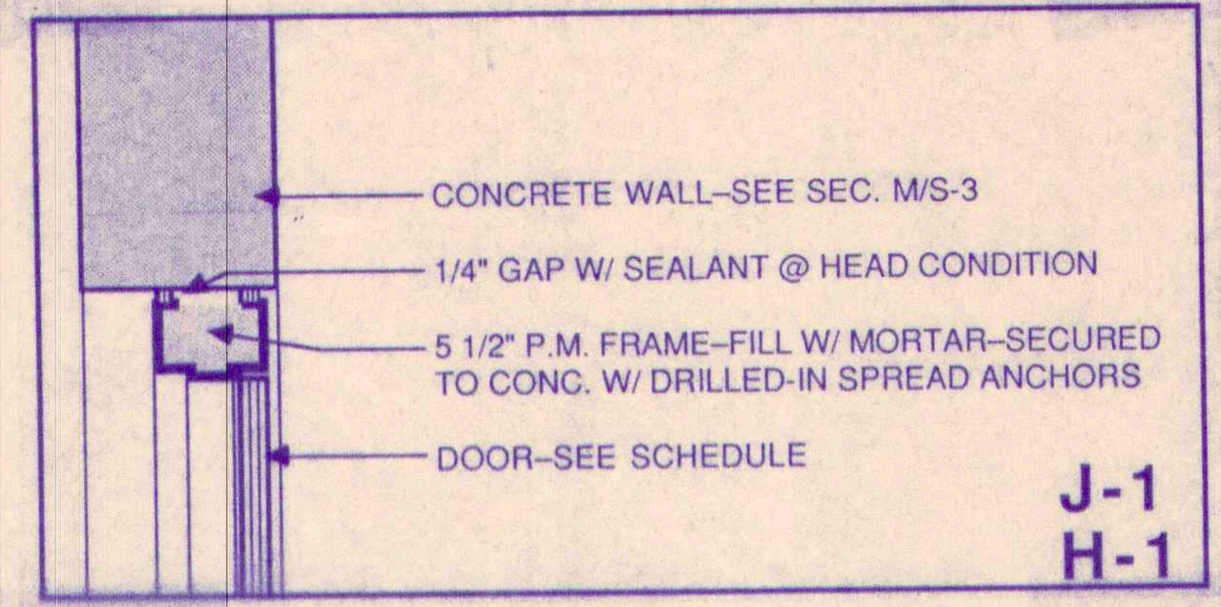

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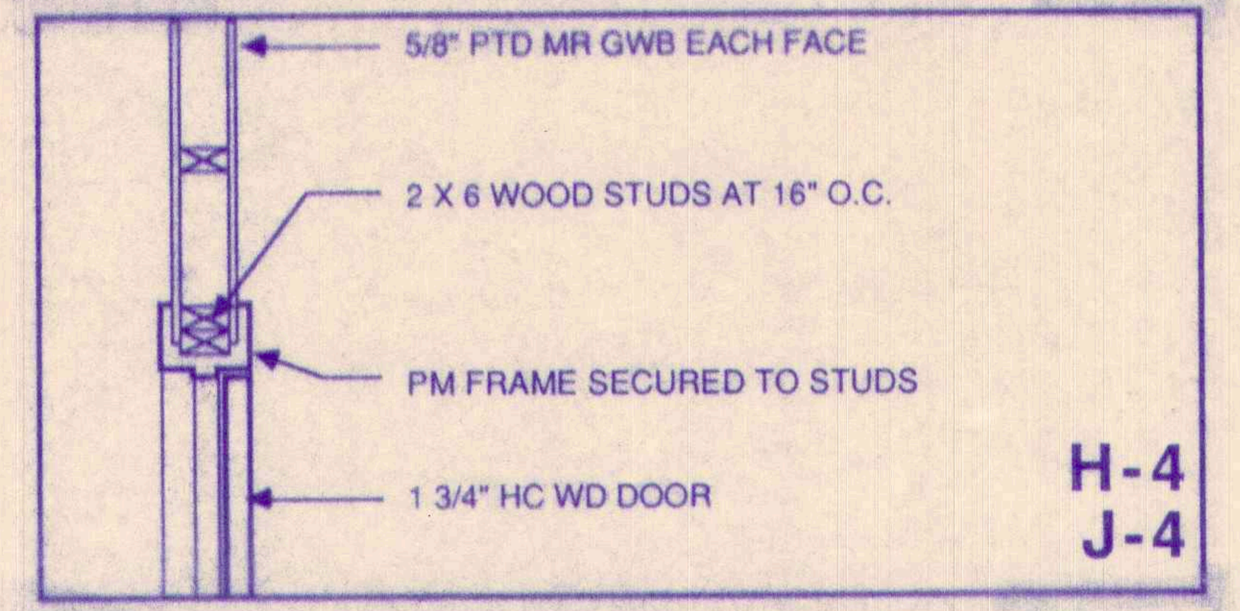
H-1



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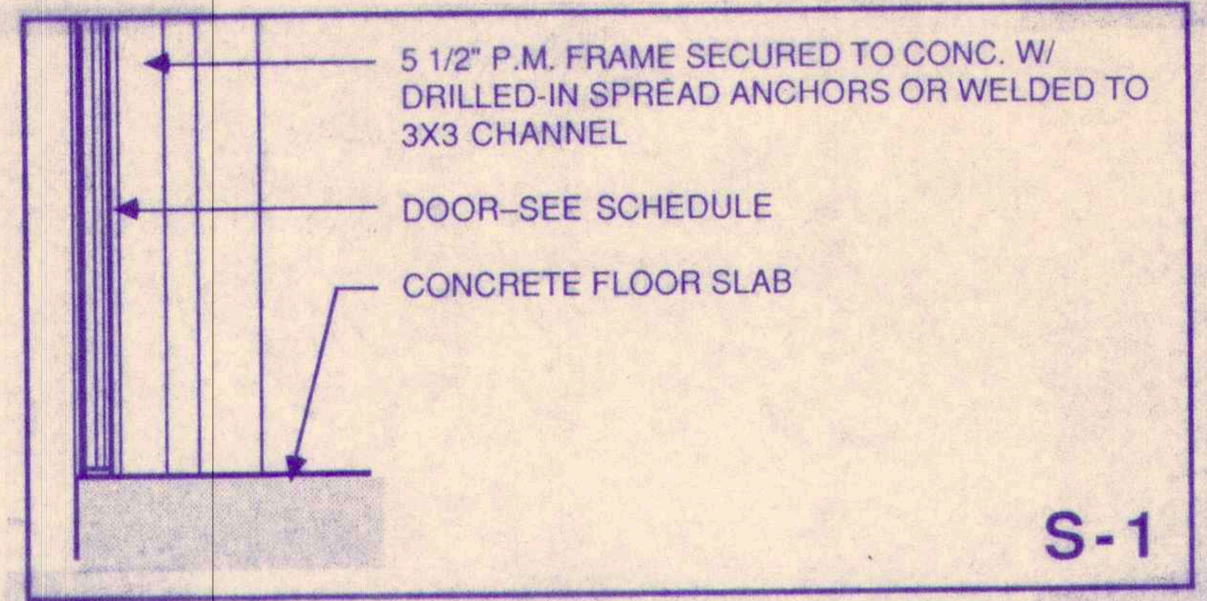
J-4



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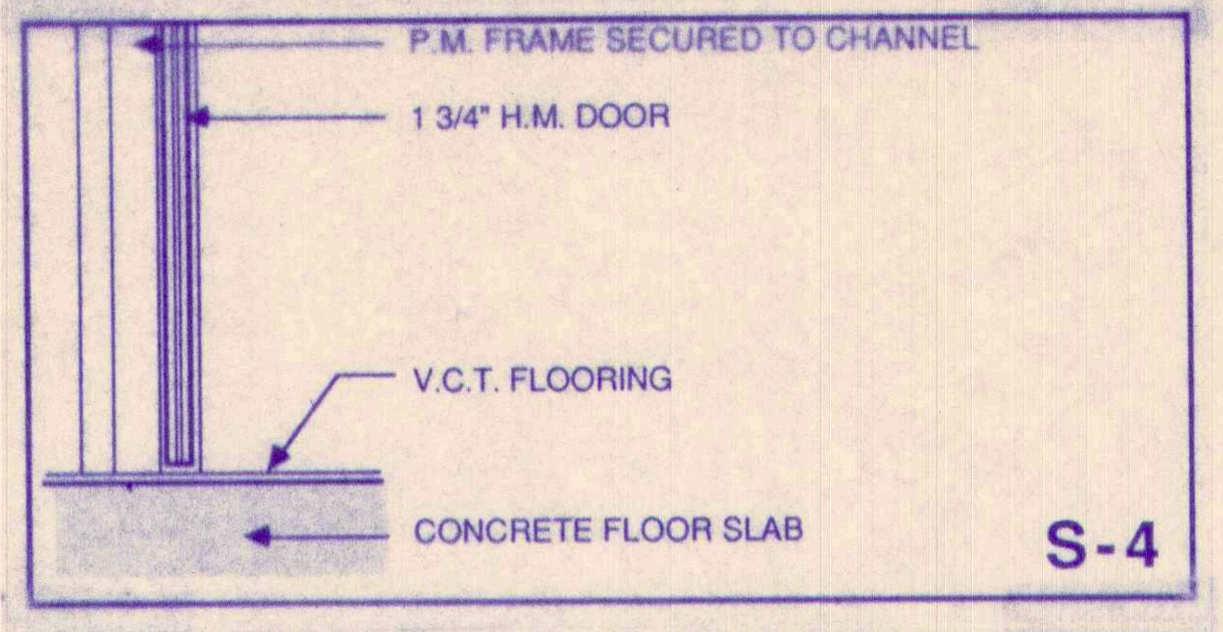

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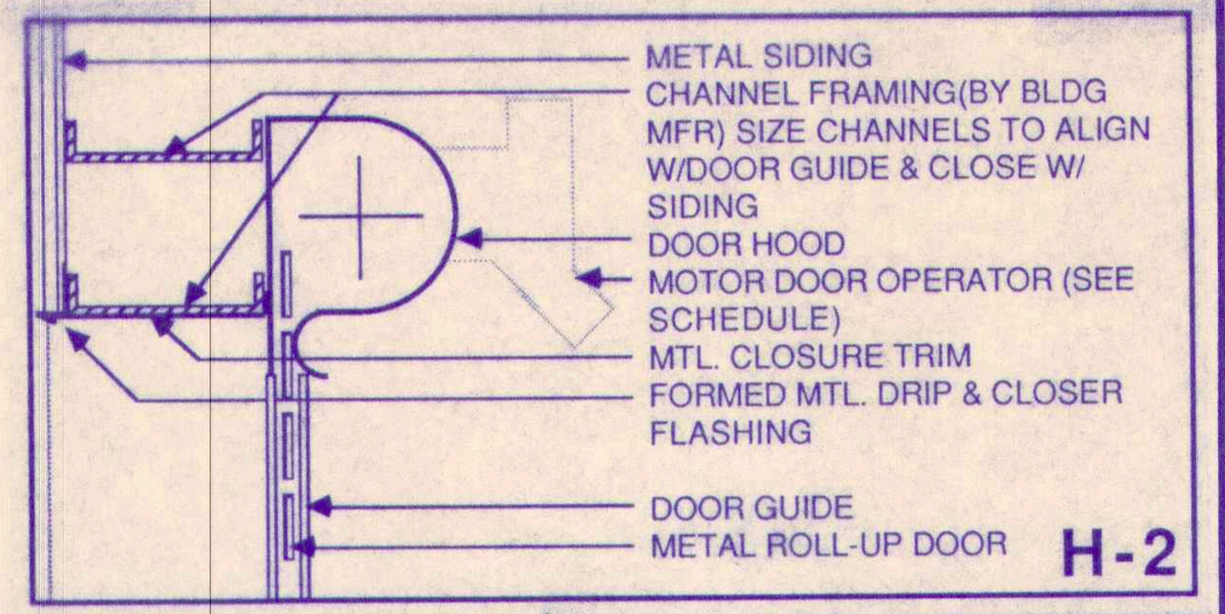

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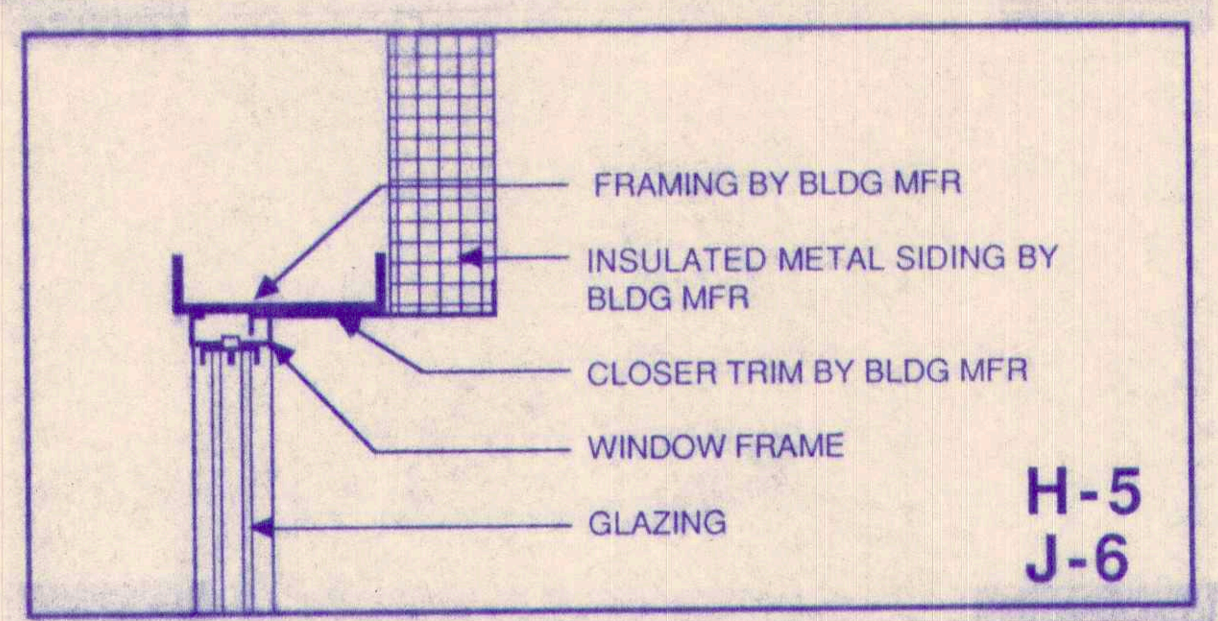

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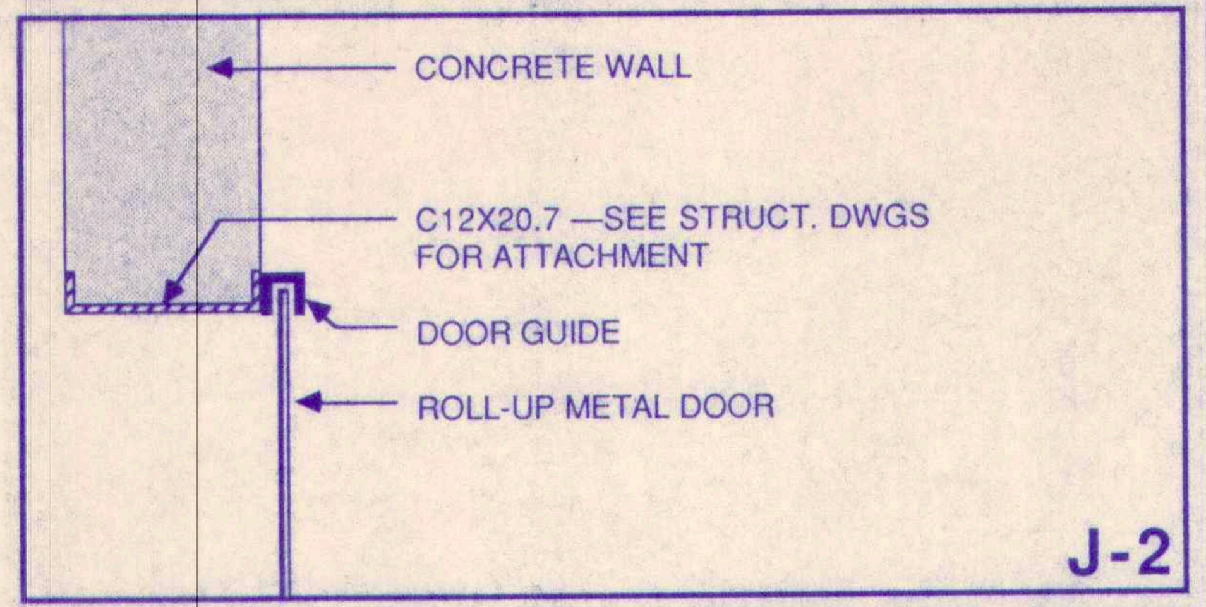

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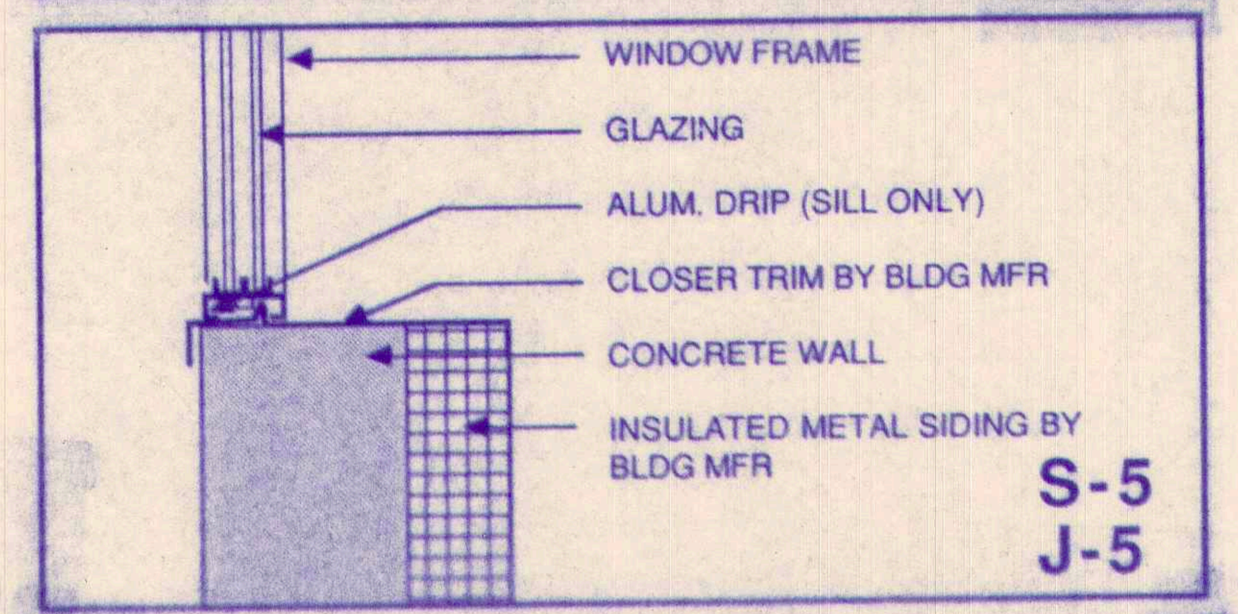
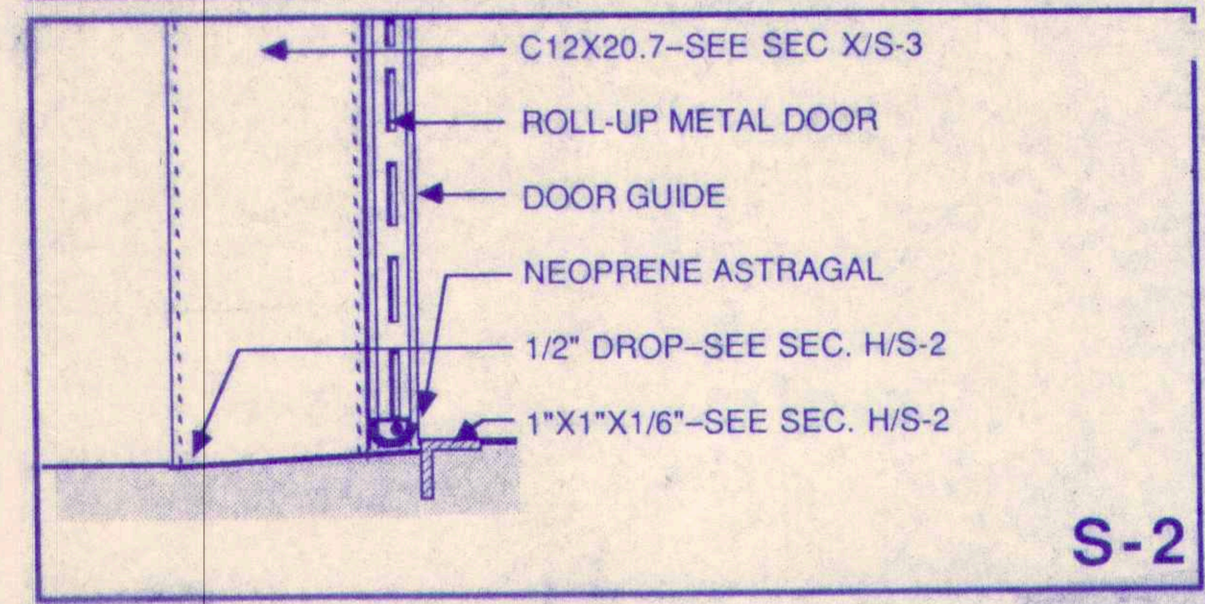


S-5
J-5



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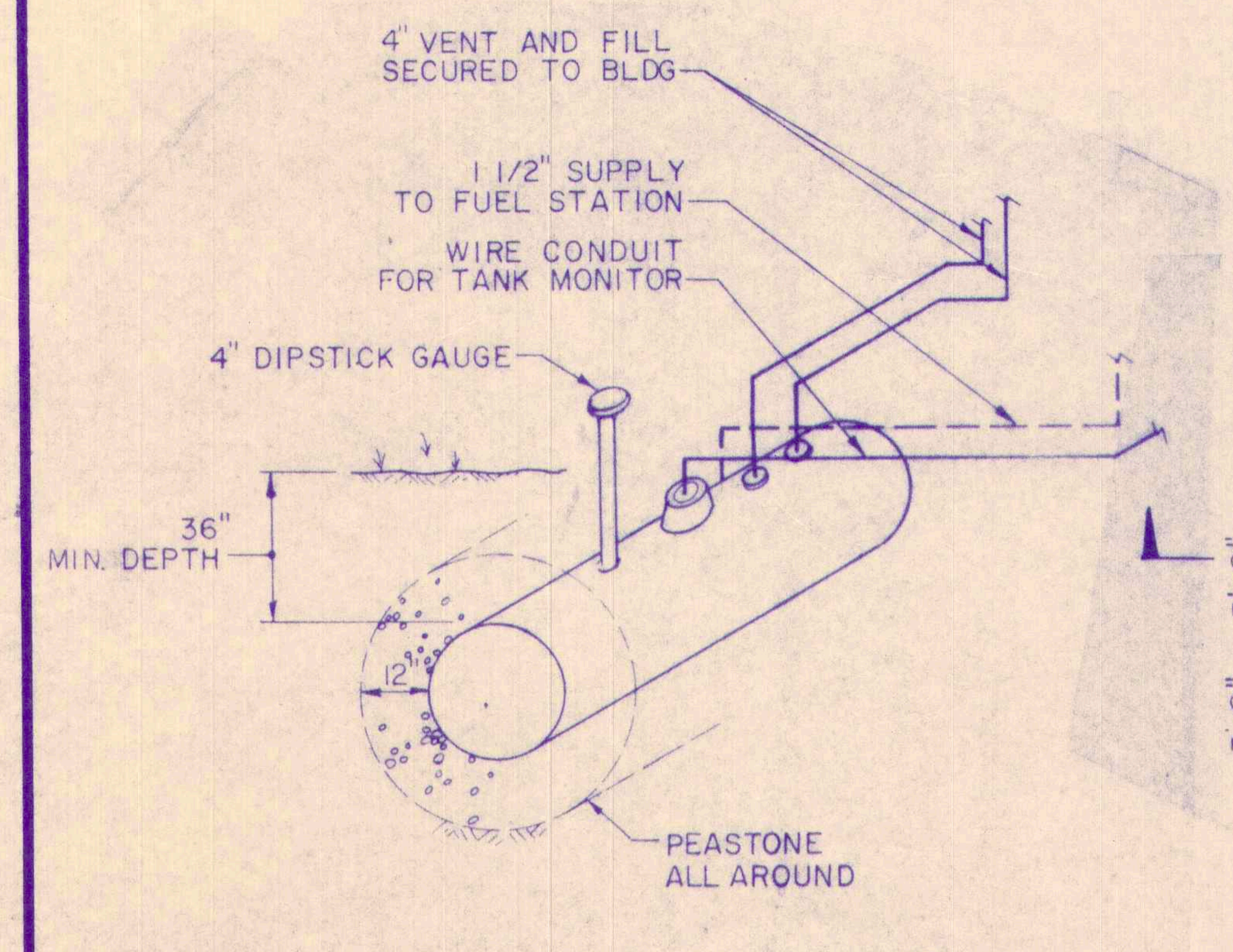
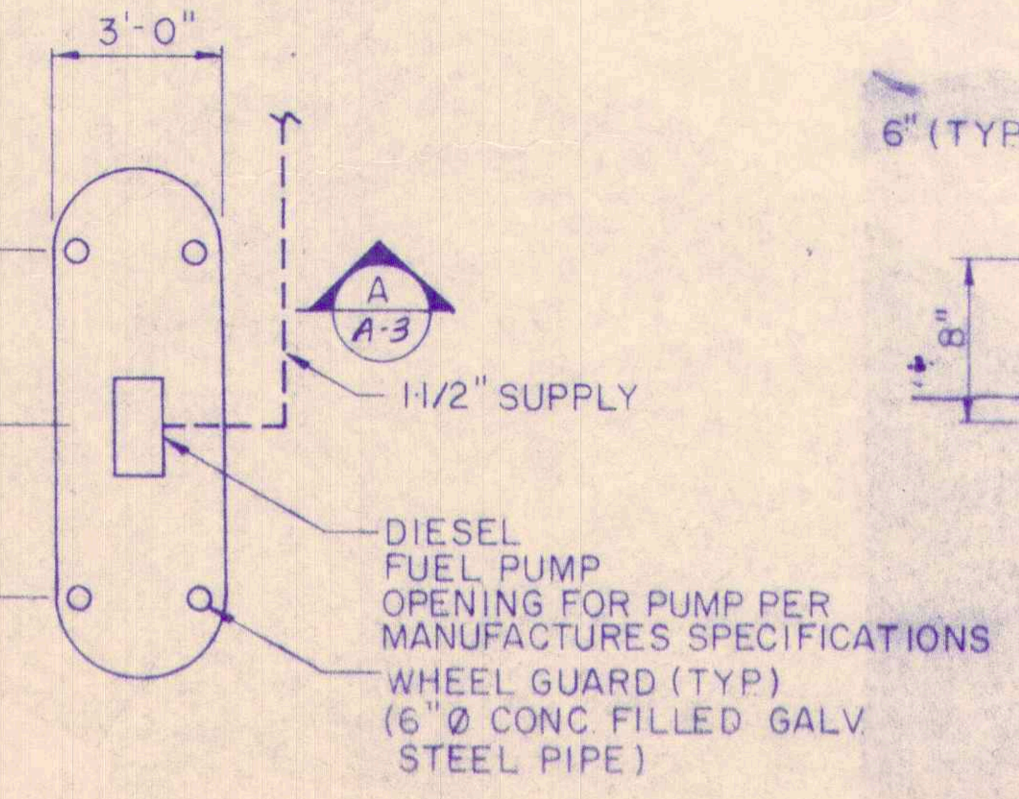


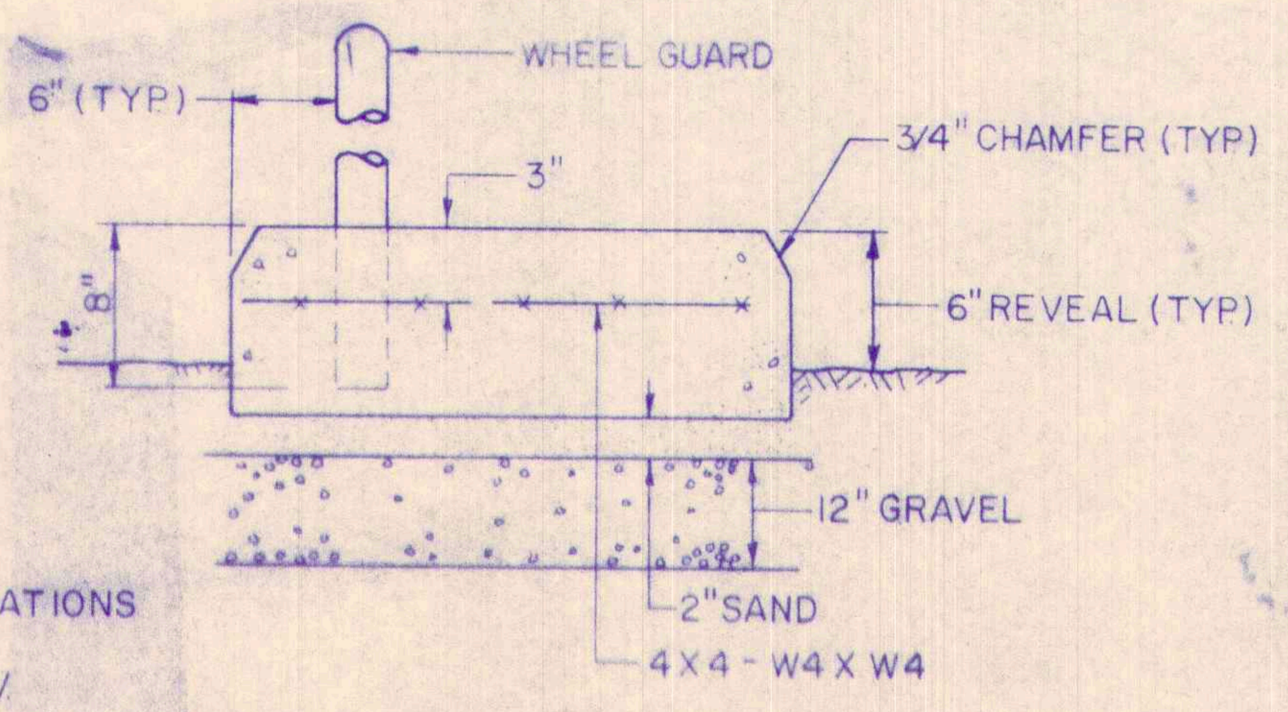
FUEL STATION DETAIL

N.T.S.



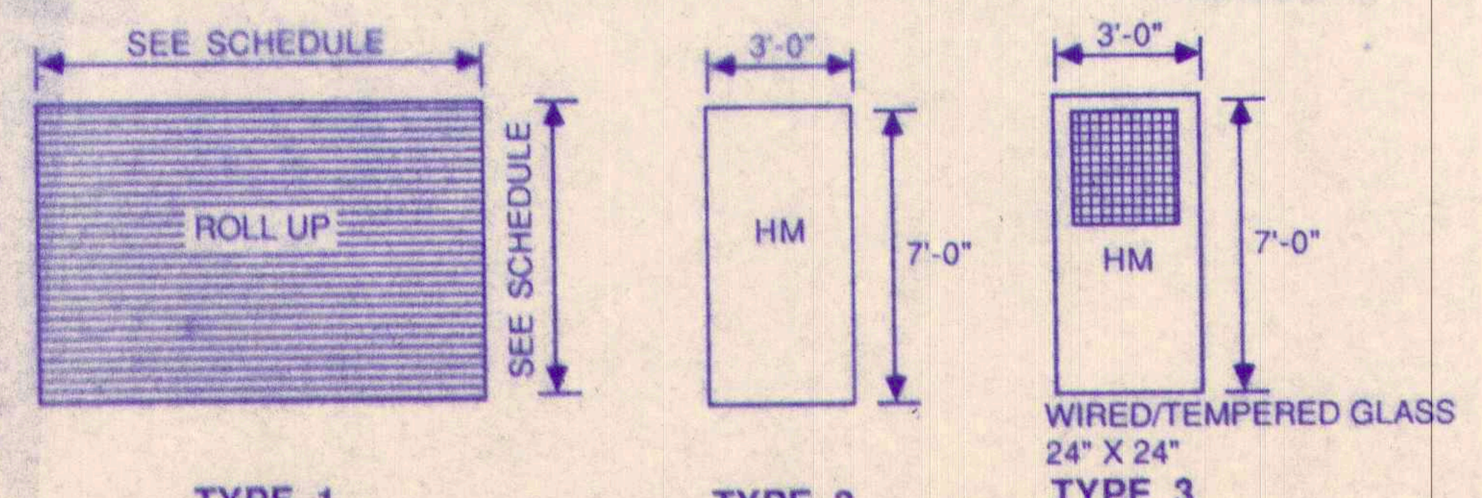
PLAN

N.T.S.



SECTION A-A

N.T.S.



TYPE 1 TYPE 2 TYPE 3

DOOR TYPES

NTS

AS-BUILT

A-3

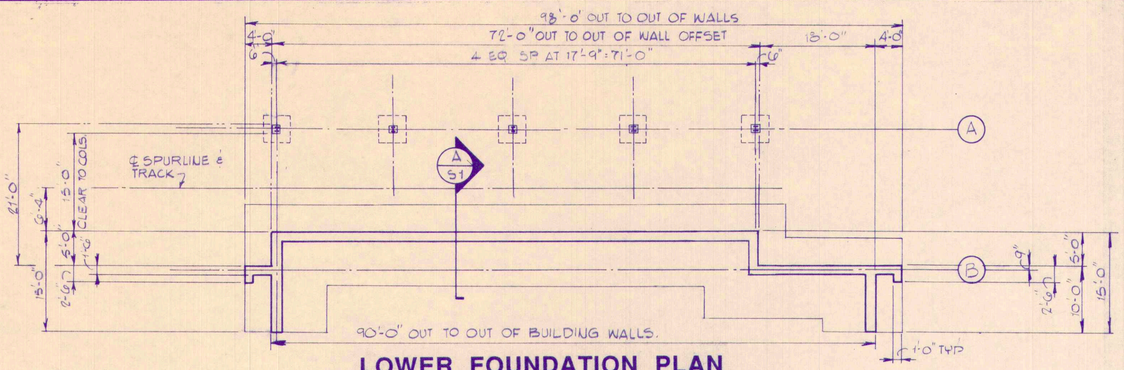
SEA Consultants Inc.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions	
△1 AS-BUILT REVISIONS	10-31-89
Approved by	

Scale N.T.S.
Date
Job no. 506-812
Designed by SRD
Drawn by SRD
Checked by 2MB
Sheet A-3

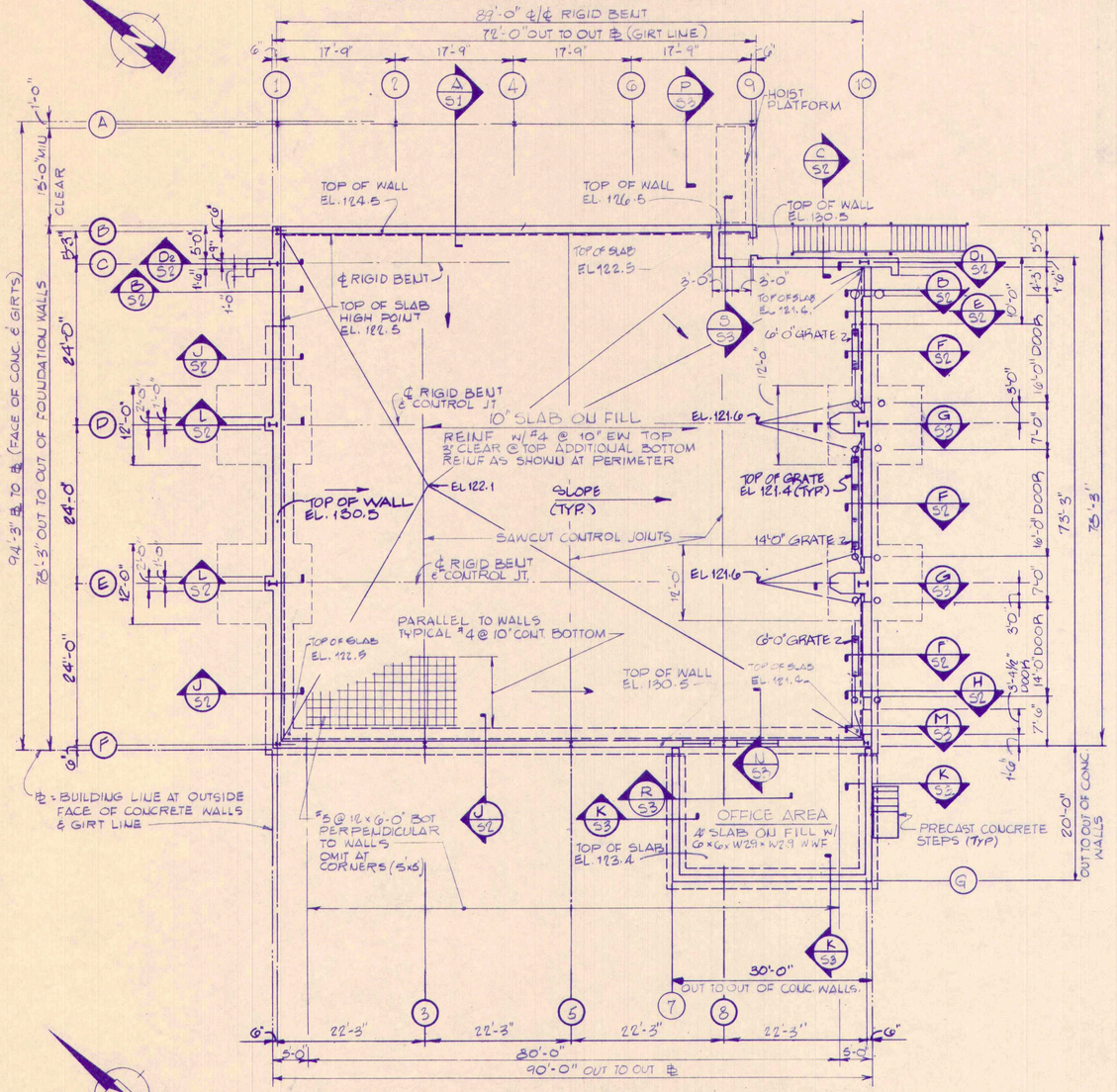
UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
DETAILS & SCHEDULES

File No.



LOWER FOUNDATION PLAN

SCALE: 3/32"=1'-0"



FLOOR PLAN AND UPPER FOUNDATION PLAN

SCALE: 3/32"=1'-0"

GENERAL NOTES:

DESIGN CRITERIA

1. SPECIFICATIONS :
   COMMONWEALTH OF MASSACHUSETTS STATE BUILDING CODE.
2. DESIGN LOADS :
   ROOF DEAD LOAD :10 PSF. (ADDITIONAL TO FRAME, PURLIN AND DECKING WEIGHTS)
   ROOF LIVE LOAD : 25 PSF. (SNOW - MODIFY FOR DRIFT AS REQUIRED)
   REFERENCE WIND PRESSURE : 21 PSF
   SEISMIC : ZONE 2 (ANSI A58-1)
   DESIGN FRAME REACTIONS AT BASE :

	VERTICAL	HORIZONTAL THRUST
DEAD	27.0K	18.7K
LIVE	27.0K	18.7K
WIND	-18.0K (UPLIFT)	-19.6K (INWARD THRUST)
RAIL CAR	LIFTING LOADS	
	CAR LID:	10,000 LBS.
	HOIST ASSEMBLY:	2,500 LBS.
	SEE SHEET S3	

CONCRETE

1. ALL CONCRETE WORK AND REINFORCING BAR DETAILS SHALL CONFORM TO THE LATEST ACI STANDARDS, ACI 318-83 AND ACI SP-66 (DETAILING MANUAL).
2. ALL CONCRETE SHALL BE AIR ENTRAINED AND SHALL HAVE A MINIMUM 28 DAYS COMPRESSIVE STRENGTH OF 4,000 PSI.
3. CONCRETE SHALL HAVE ATTAINED AT LEAST 50 PERCENT OF ITS 28-DAY COMPRESSIVE STRENGTH BEFORE FORMWORK IS REMOVED.
4. ALL CONCRETE SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER.
5. WATERPROOFING, CONCRETE FINISHES, OPENINGS, ETC. SHALL BE COORDINATED WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.
6. ROUGHEN CONCRETE SURFACE TO A FULL AMPLITUDE OF 1/4" AT CONSTRUCTION JOINTS WHERE KEYED JOINTS ARE NOT INDICATED.
7. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS AND LOCATIONS OF ANCHOR BOLTS AS REQUIRED FOR OTHER TRADES AND PRE-ENGINEERED BUILDING BEFORE CONCRETE IS PLACED; INCLUDING, BUT NOT LIMITED TO, INTERFACE BETWEEN BUILDING PANEL AND CONCRETE.
8. STEEL FACING PLATE SHALL CONFORM TO ASTM A-36

REINFORCING STEEL

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60, DEFORMED BARS, FY = 60,000 PSI.
2. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
3. MINIMUM CONCRETE COVER FOR REINFORCMENT, UNLESS OTHERWISE INDICATED, SHALL BE AS FOLLOWS:

FOOTING, FOUNDATIONS AND OTHER CONCRETE CAST AGAINST EARTH	3" MIN.
CONCRETE EXPOSED TO EARTH OR WEATHER	2" MIN.
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND :	
COLUMNS	1 1/2" MIN.
SLABS	1-1/2" MIN.
WELDED WIRE FABRIC IN FLOOR SLABS	3/4" MIN.

4. FOR FOUNDATION WALLS AND FOOTINGS, PROVIDE CORNER BARS AND DOWELS INTO ADJACENT WALLS AND FOOTINGS.

FOUNDATION

1. ALL FOUNDATIONS SHALL BEAR ON UNDISTURBED EARTH OR CONTROLLED COMPACTED BACKFILL. ALL TOPSOIL AND ANY DELETERIOUS MATERIAL SHALL BE REMOVED BEFORE PLACING CONCRETE.
2. NO FOUNDATION SHALL BE PLACED IN WATER OR FROZEN GROUND. EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 4'-0" BELOW EXTERIOR GRADE.
3. BACKFILL AGAINST WALLS SHALL BE PLACED IN ACCORDANCE WITH SPECIFICATIONS AND SHALL BE BROUGHT UP ON BOTH SIDES OF WALLS SIMULTANEOUSLY.

PRE-ENGINEERED METAL BUILDING

1. THE SUPERSTRUCTURE IS INTENDED TO BE A PRE-ENGINEERED STRUCTURE. THE MANUFACTURER SHALL DESIGN THE RIGID FRAMES, PURLINS, GIRTS, ANCHOR BOLTS AND ALL CONNECTIONS IN CONFORMANCE WITH THE COMMONWEALTH OF MASSACHUSETTS, STATE BUILDING CODE AND METAL BUILDING MANUFACTURERS ASSOCIATION SPECIFICATIONS.
2. THE CONTRACTOR SHALL COORDINATE THE REQUIREMENTS OF VARIOUS COMPONENTS (E.G., DOORS, WINDOWS, ETC) WITH PRE-ENGINEERED BUILDING VENDOR BEFORE SUBMITTING SHOP DRAWINGS TO THE ENGINEER.
3. WIND LOAD TRANSFER TO FOUNDATIONS SHALL BE BY MEANS OF DIAGONAL BRACING. DIAPHRAGM ACTION OF SIDING SHALL NOT BE USED IN LIEU OF BRACING.
4. MINIMUM 26 GAGE ROOF DECKING AND SIDING SHALL BE USED.
5. PRIOR TO CONSTRUCTION THE METAL BUILDING MANUFACTURER SHALL SUBMIT, TO THE ENGINEER FOR REVIEW, ALL COLUMN REACTIONS AS WELL AS ALL BUILDING DIMENSIONS INCLUDING, BUT NOT LIMITED TO, COLUMN SIZES, BASE PLATE SIZES, ANCHOR BOLT SIZES & LAYOUT AND INTERFACE DETAILS BETWEEN BUILDING PANEL AND CONCRETE.

SECTION

SCALE: 3/8" = 1'-0"

A 51

AS-BUILT

S-1

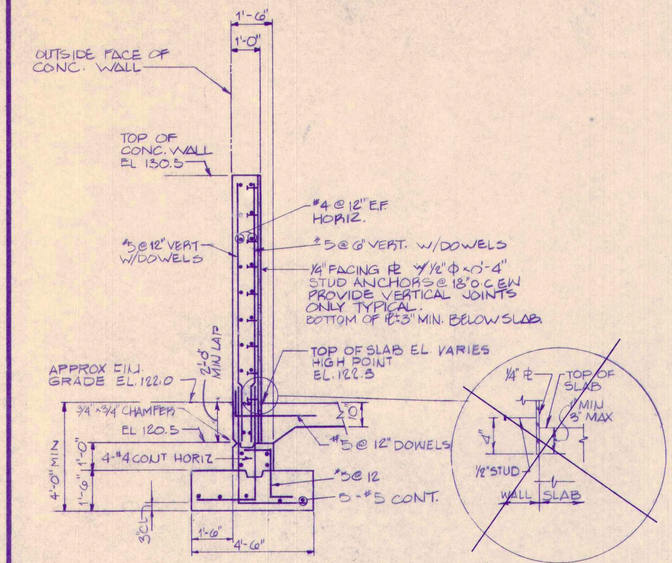
S E A CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts · South Portland, Maine
Wethersfield, Connecticut

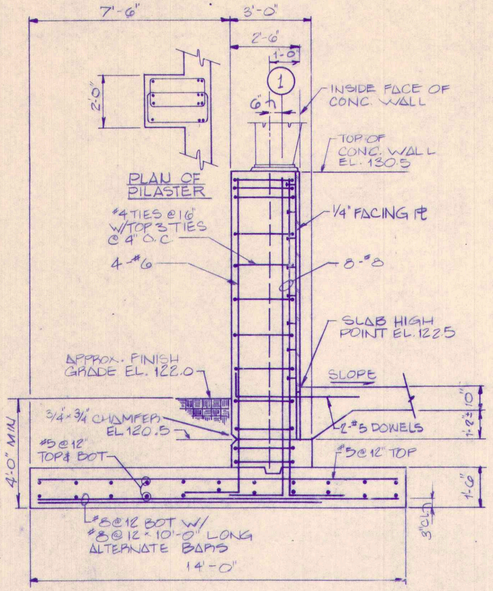
Revisions

Scale AS NOTED
Date MARCH 88
Job no. SCG-8712
Designed by PRE
Drawn by JS/PRE/MEG
Checked by A.A.S
Sheet S1 of 3
Approved by

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
FLOOR & FOUNDATION PLANS

File No.

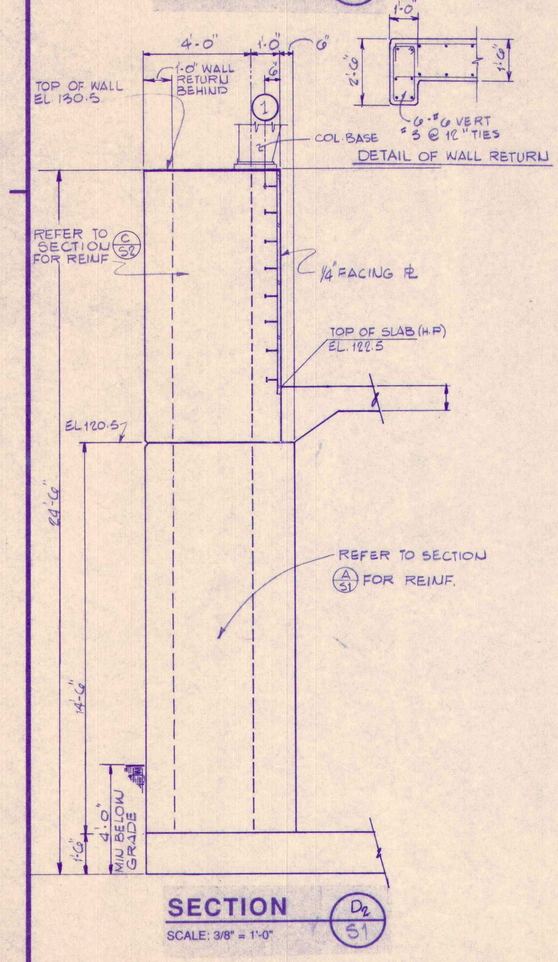




⚠ 1/4" STEEL PLATES REST @ ELEV. 120.5 HOLES CUT FOR DOWELS

SECTION J S1
SCALE: 3/8" = 1'-0"

SECTION L S1
SCALE: 3/8" = 1'-0"



SECTION D2 S1
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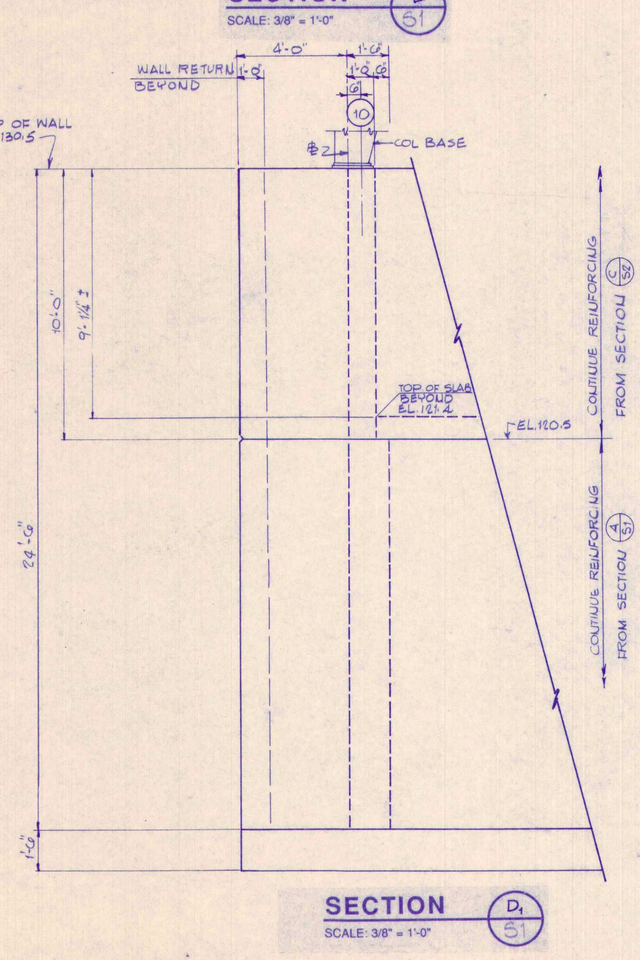

SECTION D1 S1
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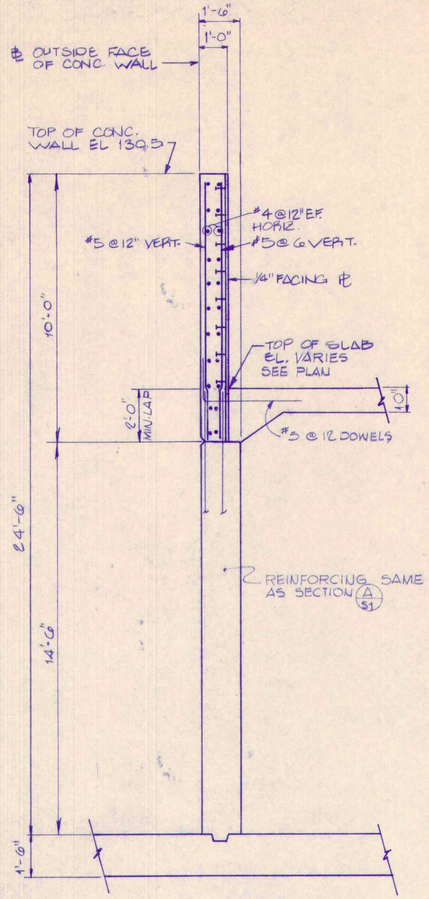

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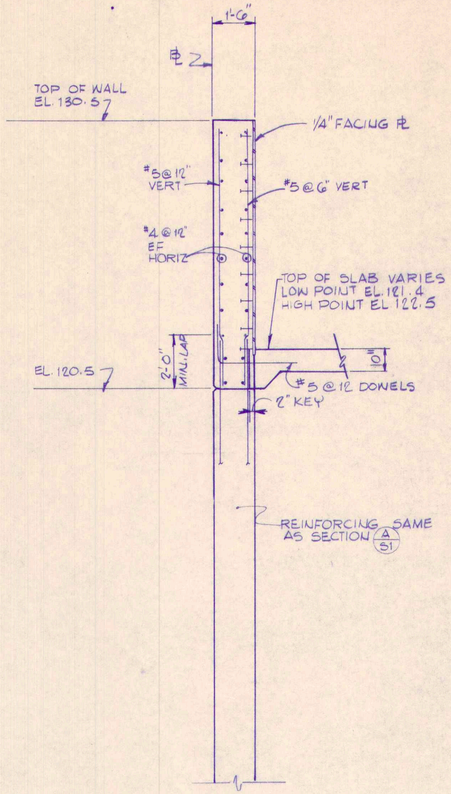

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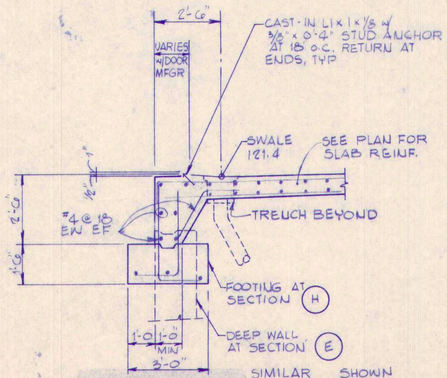

SECTION E S1 SIMILAR SECTION H S1
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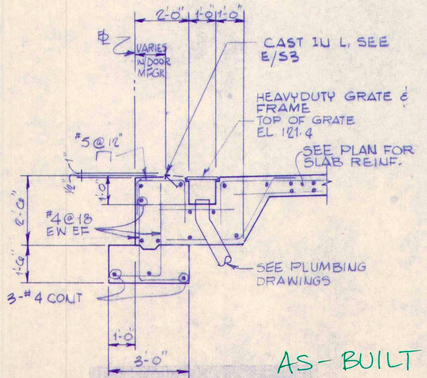


SECTION F S1
SCALE: 3/8" = 1'-0"

AS-BUILT

S-2

SEA CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions
⚠ AS-BUILT REVISIONS 10-31-89

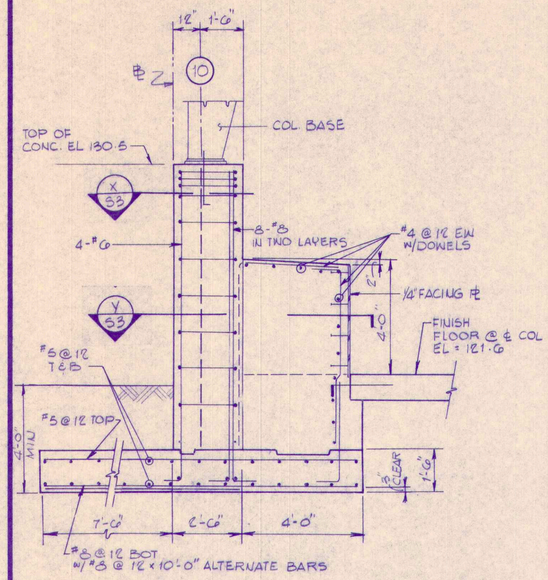
Scale AS NOTED
Date MARCH 88
Job no. 3096-8712
Designed by PRS/SJD
Drawn by JG/MEG
Checked by A.A.S.
Approved by
Sheet 3-2-01 2

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
SECTIONS & DETAILS

File No.

MAKEPEACE

NOTE: ALL LOADS & DIMENSIONS TO BE VERIFIED W/ HOIST SUPPLIER & RAIL CAR COVER MANUFACTURER.



SECTION G / S1
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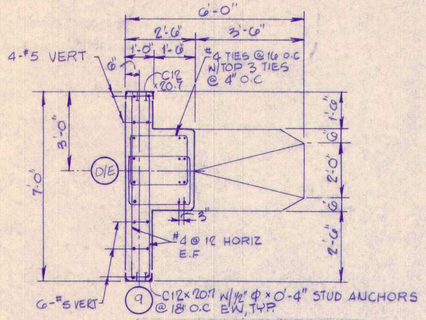

SECTION X / S3
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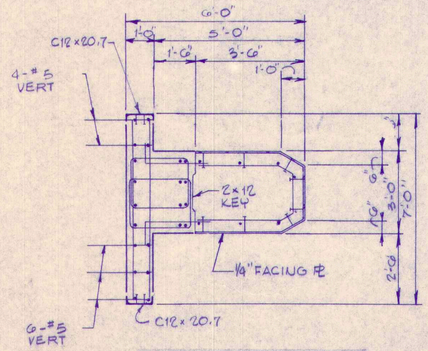

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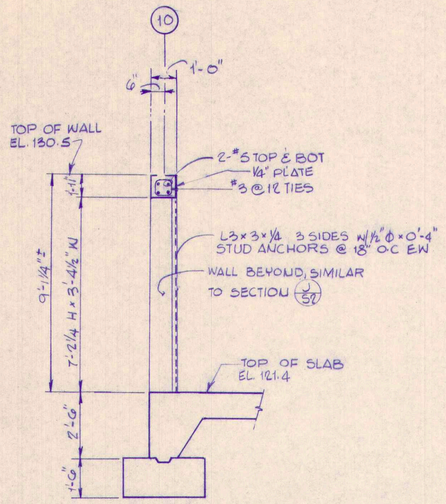

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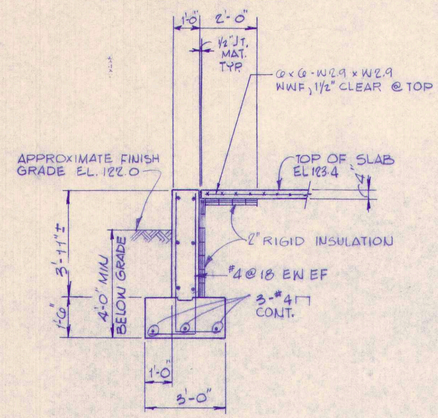

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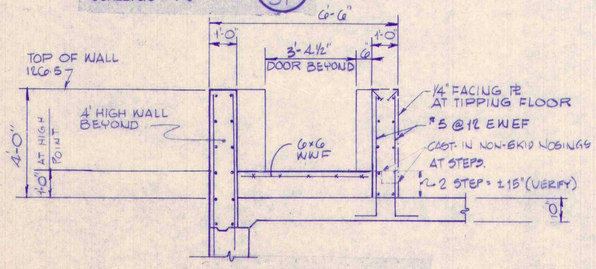

SECTION S / S1
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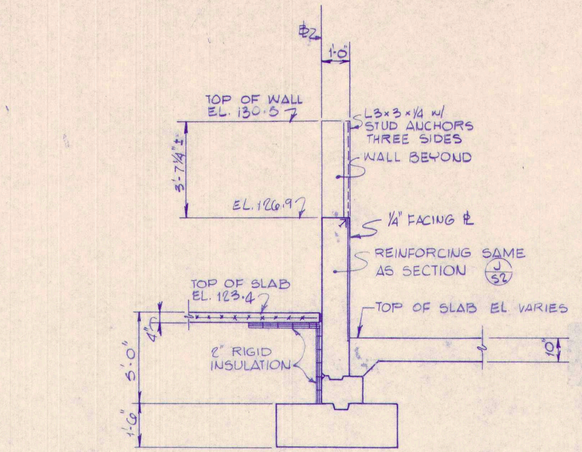
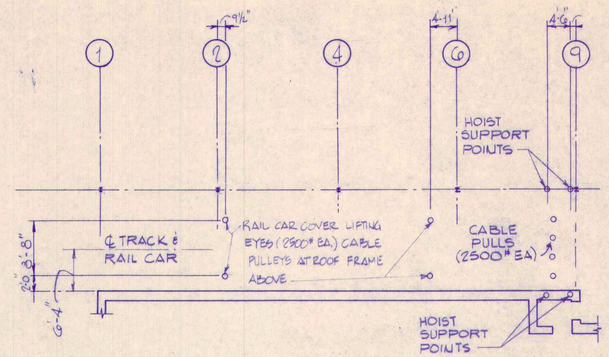


PLAN VIEW
LOCATION OF LIFTING POINTS AND LOADS
NTS



SECTION N / S1
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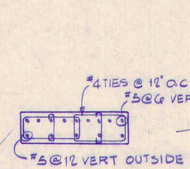
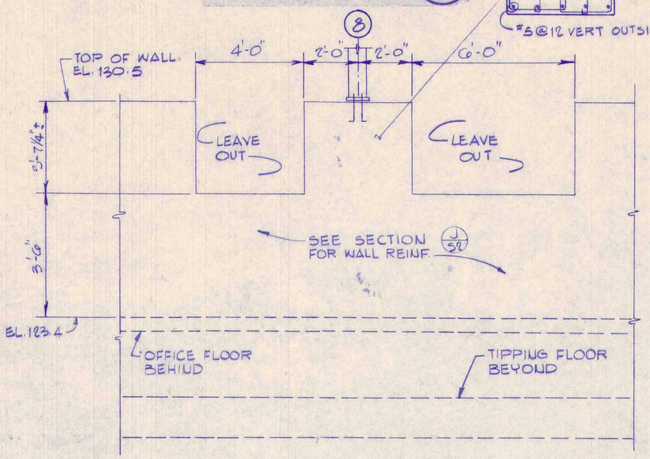
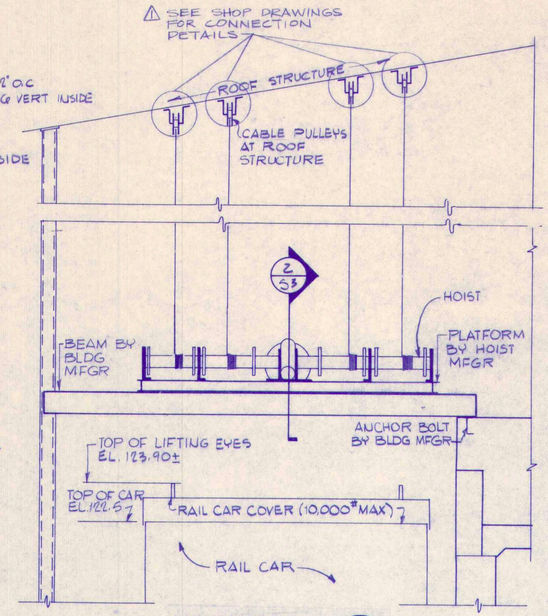




PARTIAL WALL ELEVATION R / S1
SCALE: 3/8" = 1'-0"



SECTION P / S1
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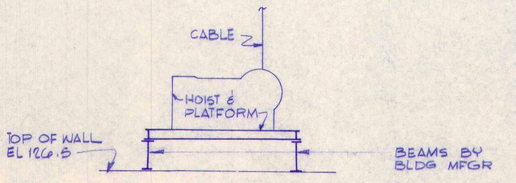


SECTION Z / S3
N.T.S.

AS-BUILT

SEA CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

Revisions
⚠ AS-BUILT REVISIONS 10-31-89

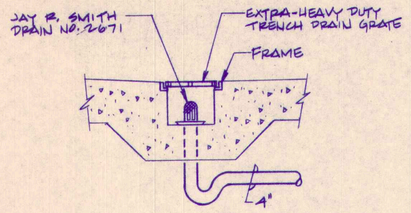
Scale AS NOTED
Date MARCH 88
Job no. 5CO-3712
Designed by PRE/JD
Drawn by J-G
Checked by A.A.S
Approved by
Sheet S-3 of 3

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
SECTIONS & DETAILS

File No.

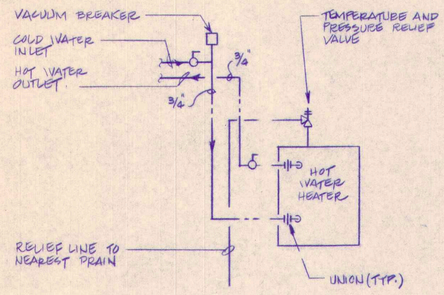
S-3

MAKEPEACE



DETAIL 1/M-1

NTS



HOT WATER HEATER DETAIL

NTS

PLUMBING FIXTURE SCHEDULE

FIXTURE NO.	FIXTURE	WASTE	VENT	COLD WATER	HOT WATER	REMARKS
P-1	WATER CLOSET	4"	2"	3/8"	—	
P-2	LAVATORY	1 1/2"	1 1/4"	3/8"	3/8"	
P-3	SHOWER	2"	2"	—	—	
P-3A	SHOWER HEAD	—	—	1/2"	1/2"	
P-4	HOT WATER HEATER	—	—	3/4"	—	
P-5	HOSE BIBB	—	—	3/4"	—	

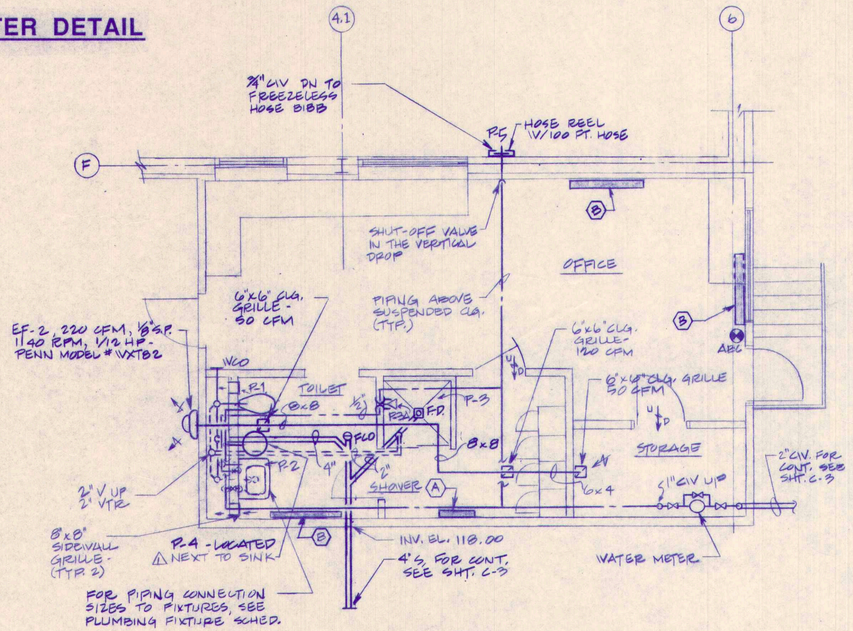
NOTES:

ELECTRIC BASEBOARD SCHEDULE

MARK NO.	MANUFACTURER	MODEL	LOCATION	WATTS	BTUH	LENGTH IN.	ELECTRIC VOLT	ELECTRIC PH	REMARKS
A	MARKEL	H2302	TOILET ROOM	375	1278	28	208	1	
B	MARKEL	F2304	OFFICE	1000	3410	48	208	1	

NOTES:

NOTE:
1. ONLY MAIN SHUT-OFF VALVES ARE SHOWN. PROVIDE ALL OTHERS IN ACCORDANCE WITH THE MASS. PLUMBING CODE.

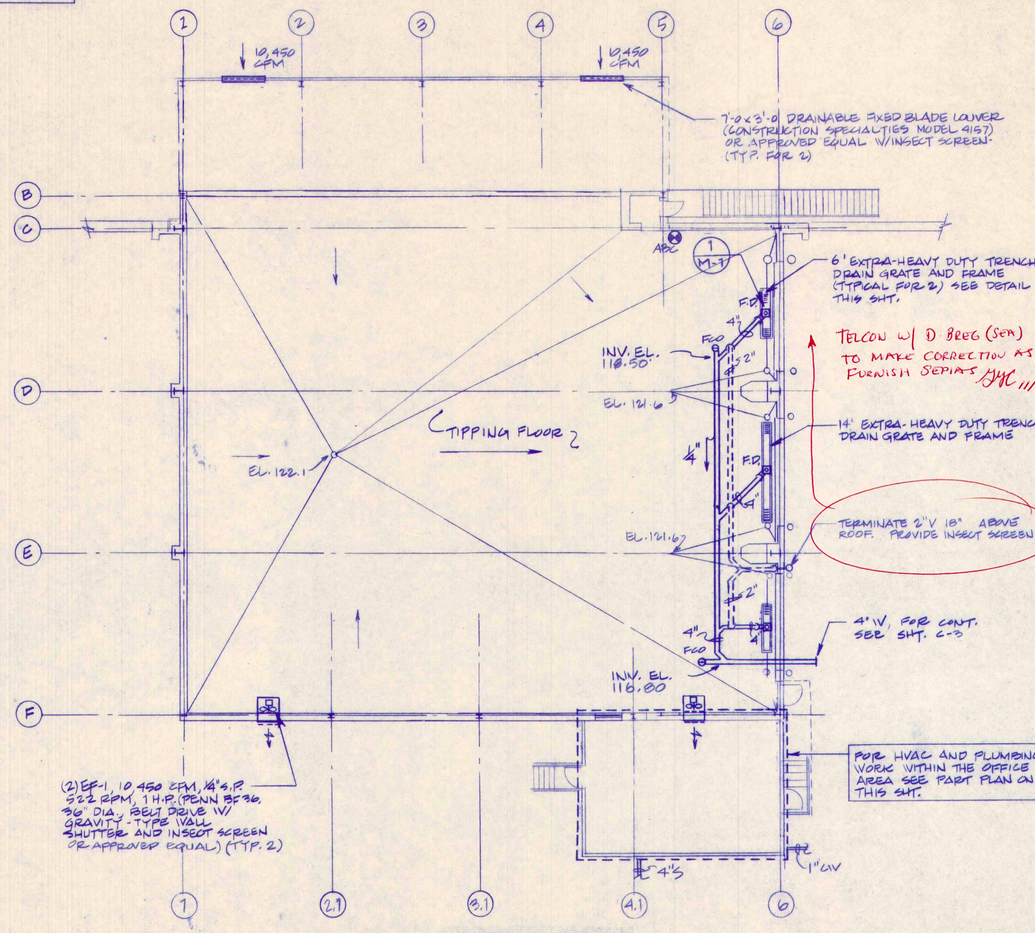


PART PLAN

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

LEGEND:

- RECTANGULAR DUCT-WIDTH X DEPTH (W X H)
- LOUVER AND SCREEN
- CEILING DIFFUSER, REGISTER OR GRILLE-EXHAUST
- FRESH OR SUPPLY AIR
- RETURN OR EXHAUST AIR
- UNDERCUT DOOR (U/D)
- RISER DOWN
- RISER UP
- COLD WATER
- HOT WATER
- COLD WATER (BELOW FLOOR)
- VENT (ABOVE FLOOR)
- VENT (BELOW FLOOR)
- SOIL - WASTE (BELOW FLOOR)
- BALL VALVE
- FD — FLOOR DRAIN
- FCO — FLOOR CLEANOUT
- INV. EL. — INVERT ELEVATION
- E. F. — EXHAUST FAN
- V — VENT
- WCO — WALL CLEANOUT
- VTR — VENT THRU ROOF
- ABC — FIRE EXTINGUISHER



FLOOR PLAN

SCALE: 3/32" =1'-0"

AS-BUILT

M-1

SEA CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

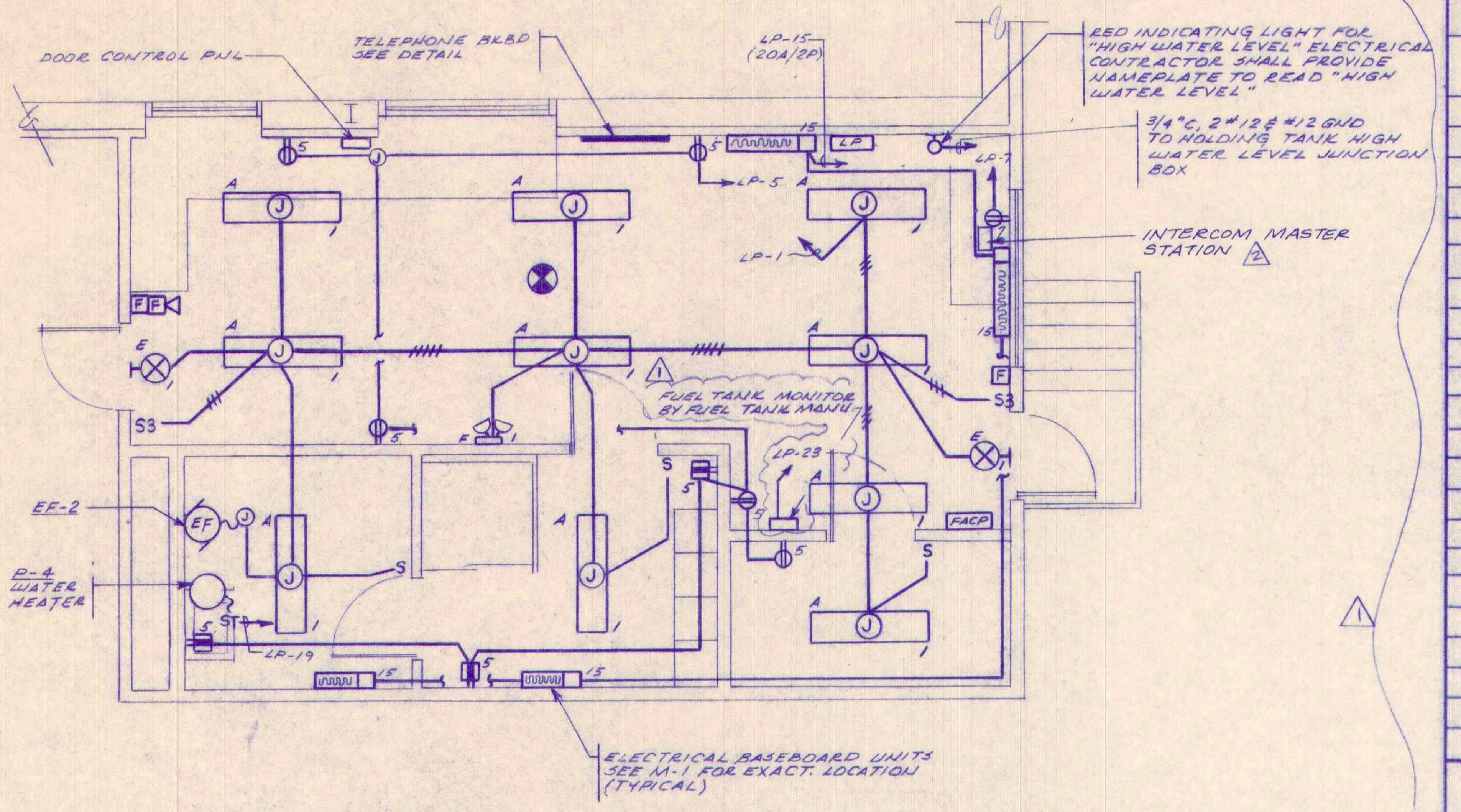
Revisions
1 AS-BUILT REVISIONS 10-21-89

Scale As NOTED
Date 3/18/88
Job No. 506.9712
Designed by AMC
Drawn by AMC
Checked by PJG
Sheet M-1 of /
Approved by

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
MECHANICAL AND PLUMBING PLAN

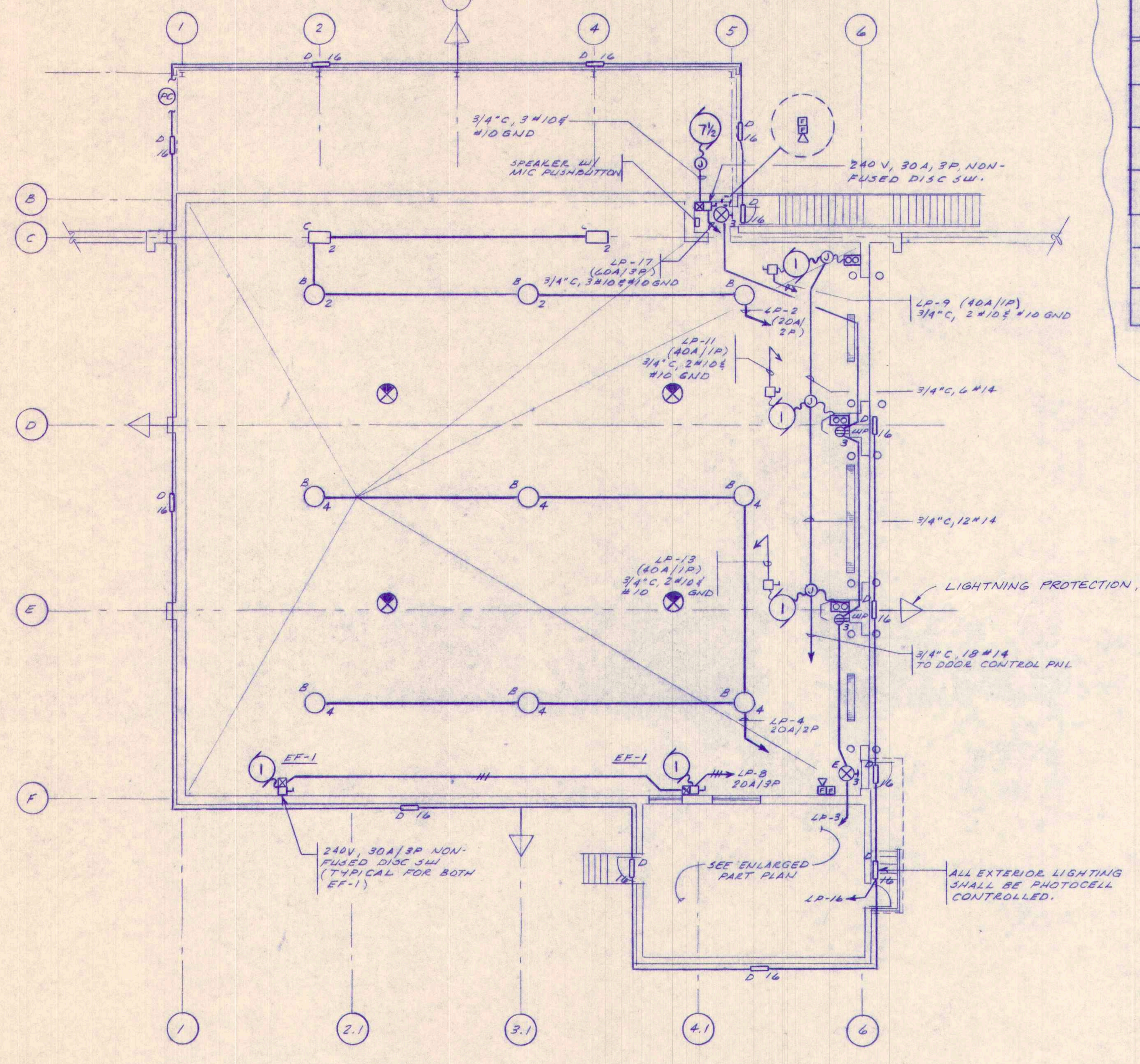
File No.

MAKEPEACE



ENLARGED PART PLAN

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



LIGHTING AND POWER PLAN

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

LOCATION: OFFICE — PANEL: LP — VOLTAGE: 120/208V, 3Ø-4W

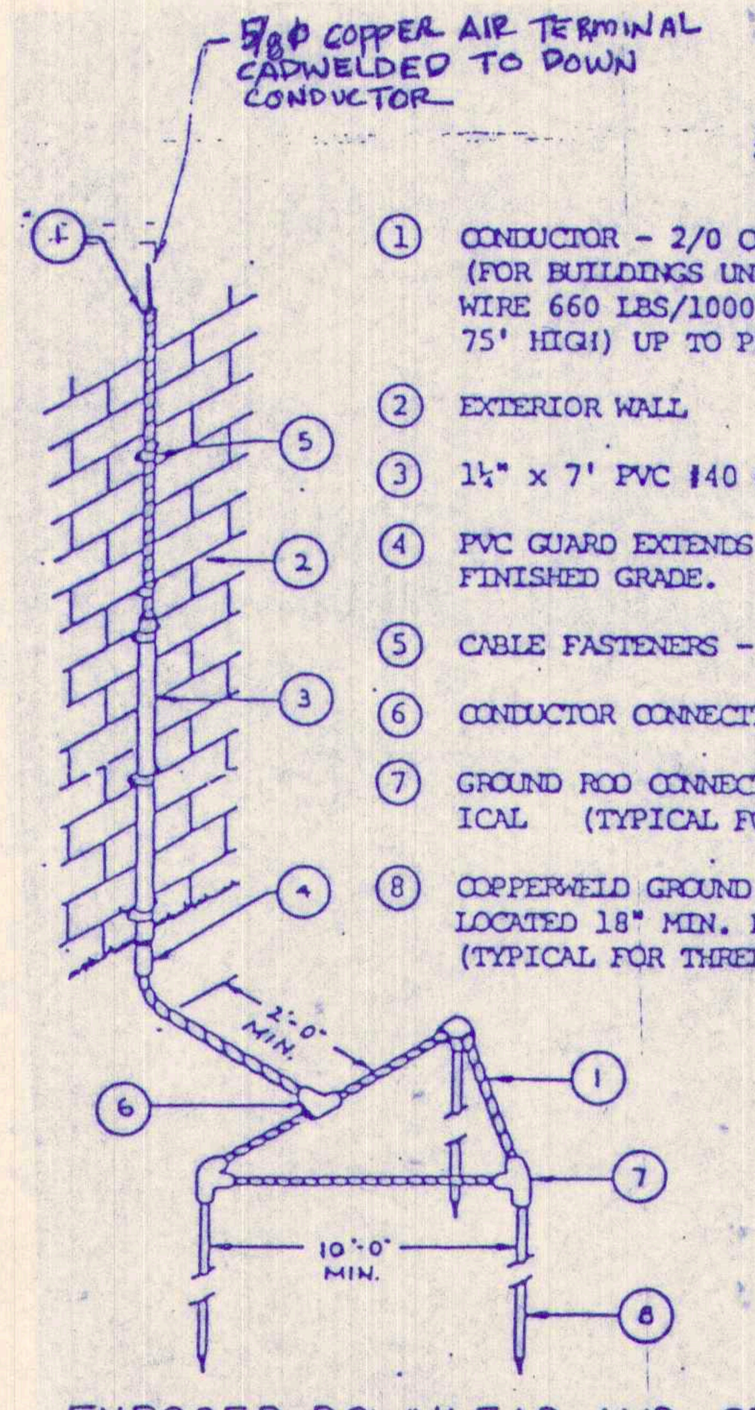
MOUNTING: SURFACE — RATING: 225 A — TYPE OF MAIN: 175A M.C.B.

DESCRIPTION	VOLTAMPS ϕA	ϕB	ϕC	HP/KW	TRIP	POLES	CKTS	CKTS	POLES	TRIP	HP/KW	VOLTAMPS ϕA	ϕB	ϕC	DESCRIPTION
OFFICE LIGHTING	1210				20	1	1	2	2	20		1200			TIPPING FLR LIGHTING
EXIT LTG & RECPT		700			20	1	3						1200		
RECPTS			1440		20	1	5	4	2	20				1440	TIPPING FLOOR LIGHTING
RECPT (VEHICLE SCALE TERM)	1000				20	1	7					1440			
OVHD DOOR		1920		50		1	9	6	2	20			1440		SITE LIGHTING
OVHD DOOR			1920	50		1	11							1440	
OVHD DOOR	1920			50		1	13					1000			
ELEC BASEBOARD		1700			20	2	15	8	3	20			1000		EF-1
			1700											1000	
	2906							10	1	20		200			LEVEL ALARM
HOIST		2906			60	3	17	12	1	20			800		FACP
			2906					14	1	20				500	TELEPHONE RECPT
HOT WATER HEATER	1650				20	1	19	16	1	20		1300			EXTERIOR LIGHTING
FUEL PUMP		860			20	1	21	18	1	20			500		INTERCOM SYSTEM
FUEL TANK MONITOR			500		20	1	23	20	1	20					SPARE
SPACE						1	25	22	1	20					SPARE
						1	27	24	1						SPACE
						1	29	26	1						
						1	31	28	1						
						1	33	30	1						
						1	35	32	1						
SUB-TOTALS															SUB-TOTALS

10,000 S.C.A.

LIGHTING FIXTURE SCHEDULE

DESIG	MANUFACTURER	DESCRIPTION	MTG	VOLT	LAMP QTY	LAMP TYPE	REMARKS
A	KEYSTONE	PROTON SERIES WRAP AROUND 1'X4'	S	120	2	F40T12RS/CW/WM	OFFICE
B	ABOLITE	HIGH BAY LUMINAIRE ALL SERIES W/ 6% UPLIGHT	P	208	1	400W HPS	PROVIDE POWER HOOK
C	APPLETON	AREAMASTER 400	S	208	1	400W HPS	PROVIDE BEAM CLAMP
D	KENALL	5400 SERIES W/ HOOD	S	120	1	70W HPS	PROVIDE POSI-GRIP SCREWS
E	ELS	EXIT LIGHT TYPE FRX-RS-S	S	120	2	F6T5CW	EXIT W/ BATTERY BACK-UP
F	EMERGENCY LIGHTING	12V SELF CONTAINED BATTERY UNIT	W	120	2	25W/SEALED BEAM	
G	McGRAW EDISON	CUTOFF LUMINAIRE POWER DRAW SERIES	40' POLE	208	1	400W HPS	PROVIDE PHOTO-CELL & 40' SQ STEEL POLE



LEGEND

1. CONDUCTOR - 2/0 COPPER WIRE 420 LBS/1000 FT. (FOR BUILDINGS UNDER 75' HIGH), 4/0 COPPER WIRE 660 LBS/1000 FT. (FOR BUILDINGS OVER 75' HIGH) UP TO PREVENTOR UNIT.
2. EXTERIOR WALL.
3. 1¼" x 7' PVC #40 CONDUIT GROUND GUARD
4. PVC GUARD EXTENDS 1'-0" MIN. BELOW FINISHED GRADE.
5. CABLE FASTENERS - 3'-0" O.C. MAXIMUM
6. CONDUCTOR CONNECTION - CADWELD OR MECHANICAL
7. GROUND ROD CONNECTION - CADWELD OR MECHAN-ICAL (TYPICAL FOR THREE)
8. COPPERWELD GROUND ROD - 3/4" x 10'-0" LOCATED 18" MIN. BELOW FINISHED GRADE (TYPICAL FOR THREE)

EXPOSED DOWNLOAD AND GROUND ROD CONNECTION DETAIL

LEGEND

- LIGHTING FIXTURE, CEILING MOUNTED, "A" INDICATES FIXTURE TYPE, "1" INDICATES CIRCUIT NUMBER.
- EXIT LIGHTING FIXTURE CEILING OR WALL MOUNTED, SEE NOMENCLATURE ABOVE.
- DUPLEX CONVENIENCE OUTLET 20A, 125V, GROUNDING TYPE, SPEC GRADE, MTD 18" AFF WP" INDICATES WEATHER PROOF, SHADED RECEPTACLES MOUNTED 48" A.F.F., "1" INDICATES CIRCUIT NUMBER.
- DUPLEX CONVENIENCE OUTLET 20A, 125V, GROUND FAULT INTERRUPTING RECEPTACLES MOUNTED 48" A.F.F., "1" INDICATES CIRCUIT NUMBER.
- JUNCTION BOX WITH FLEXIBLE CONNECTION.
- MOTOR, NUMERAL INDICATES HORSEPOWER.
- NONFUSED DISCONNECT SWITCH, HEAVY DUTY TYPE, NEMA 12 ENCLOSURE RATING AS INDICATED OF THE PLAN.
- MAGNETIC MOTOR STARTER
- PUSHBUTTON STATION
- LP 1&3 — HOMERUN TO PANELBOARD. TICKS INDICATE NUMBER OF #12 AWG CONDUCTORS IN ADDITION TO 1 #12 GND. TWO #12 AWG NOT INDICATED BY TICKS, MINIMUM CONDUIT SIZE 3/4-INCH. NUMERALS INDICATE CIRCUIT NUMBERS IN PANEL LP.
- PC — PHOTOCELL
- RACEWAY
- INDICATES GROUND
- F — FIRE ALARM PULLSTATION MOUNTED 48" AFF. SHALL BE NON-CODED BREAK GLASS TYPE WITH A KEY OPERATED TEST-RESET LOCK.
- F — FIRE ALARM COMBINATION HORN/LIGHT UNIT MTD 90" AFF.
- PHOTOELECTRIC TYPE SMOKE DETECTOR
- COMBINATION 135° FIXED TEMP, RATE OF RISE HEAT DETECTOR.
- FACP/FAA — FIRE ALARM CONTROL PANEL / ANNUNCIATOR.
- S_T — TOGGLE OPERATED MANUAL MOTOR STARTER
- AWG — DENOTES AMERICAN WIRE GAUGE.
- WP — DENOTES WEATHERPROOF.
- AFF — ABOVE FINISHED FLOOR
- S — 20A, 125V, SINGLE POLE SPEC GRADE SWITCH
- S3 — 20A, 125V, THREE WAY SPEC GRADE SWITCH.
- FVR — FULL VOLTAGE REVERSING
- AFG — ABOVE FINISHED GRADE
- SP — SHIELDED PAIR
- ELEC BASEBOARD HTR

NOTES

1. ALL CONDUIT SHALL BE A MINIMUM OF 3/4" UNLESS OTHERWISE NOTED.
2. ALL CONDUIT SHALL BE HOT DIPPED GALVANIZED RIGID STEEL OR HOT DIPPED INTERMEDIATE METAL CONDUIT. LIQUID-TIGHT FLEXIBLE METAL CONDUIT SHALL BE USED IN SHORT LENGTHS NOT TO EXCEED 6 FEET FOR TERMINATING CONDUITS TO MOTORS OR VIBRATING EQUIPMENT.
3. ALL CONDUITS IN THE TIPPI NG FLOOR AREA SHALL BE RUN EXPOSED; PARALLEL OR PERPENDICULAR TO WALL, STRUCTURAL MEMBERS OR INTERSECTIONS OF VERTICAL PLANES AND CEILINGS.
4. ALL CONDUCTORS SHALL BE COPPER 75° C TYPE THWN AMERICAN WIRE GUAGE AND COLOR CODED IN ACCORDANCE WITH THE MASSACHUSETTS ELECTRIC CODE.
5. ALL CONNECTIONS THROUGHOUT THE ENTIRE JOB, INCLUDING ALL TAPS SHALL BE MADE WITH SOLDERLESS TYPE DEVICES OF APPROVED DESIGN SATISFACTORY TO THE LOCAL INSPECTOR AND THE ENGINEER.
6. ALL CONDUCTORS SHALL BE INSULATED FOR THE 600 VOLTS AND SHALL BEAR THE U.L. LABEL.
7. OUTLET AND JUNCTION BOXES IN THE TIPPING FLOOR AREA SHALL BE OF THE CAST TYPE WITH THREADED HUBS AND GASKETED COVERPLATES, OF NOT LESS THAN MINIMUM SIZE REQUIRED BY THE N.E.C. AND SHALL BE FURNISHED WITH SCREW FASTENED COVERS.
8. STATIONS AND OFFSETS FOR BUILDING REFER TO OUTSIDE FACE OF FOUNDATION.
9. FOR CONTINUATION OF UTILITIES IN BUILDING SEE SHEETS M-1 AND E-1.
10. PAYMENT LIMITS: PAYMENT OF RESTORATION OF DISTURBED AREAS UNDER THIS CONTRACT APPLIES ONLY TO AREAS WITHIN THE DEFINED WORK LIMITS. ALL DISTURBANCES TO EXISTING CONDITIONS BEYOND THE PRESCRIBED WORK LIMITS SHALL BE FULLY RESTORED BY THE CONTRACTOR TO PRE-CONTRUCTION CONDITIONS OR BETTER AT NO ADDITIONAL COST TO THE OWNER.
11. CONTRACTOR TO ESTABLISH PROPERTY LINES IN THE FIELD.
12. CONTRACTOR SHALL OVERLAY EXISTING ACCESS ROAD WITH 2" OF BITUMINOUS CONCRETE FROM EDGE OF RIVERLIN ST. TO LIMIT OF WORK LINE WHEN FINAL PAVING IS PERFORMED.

AS-BUILT

E-1

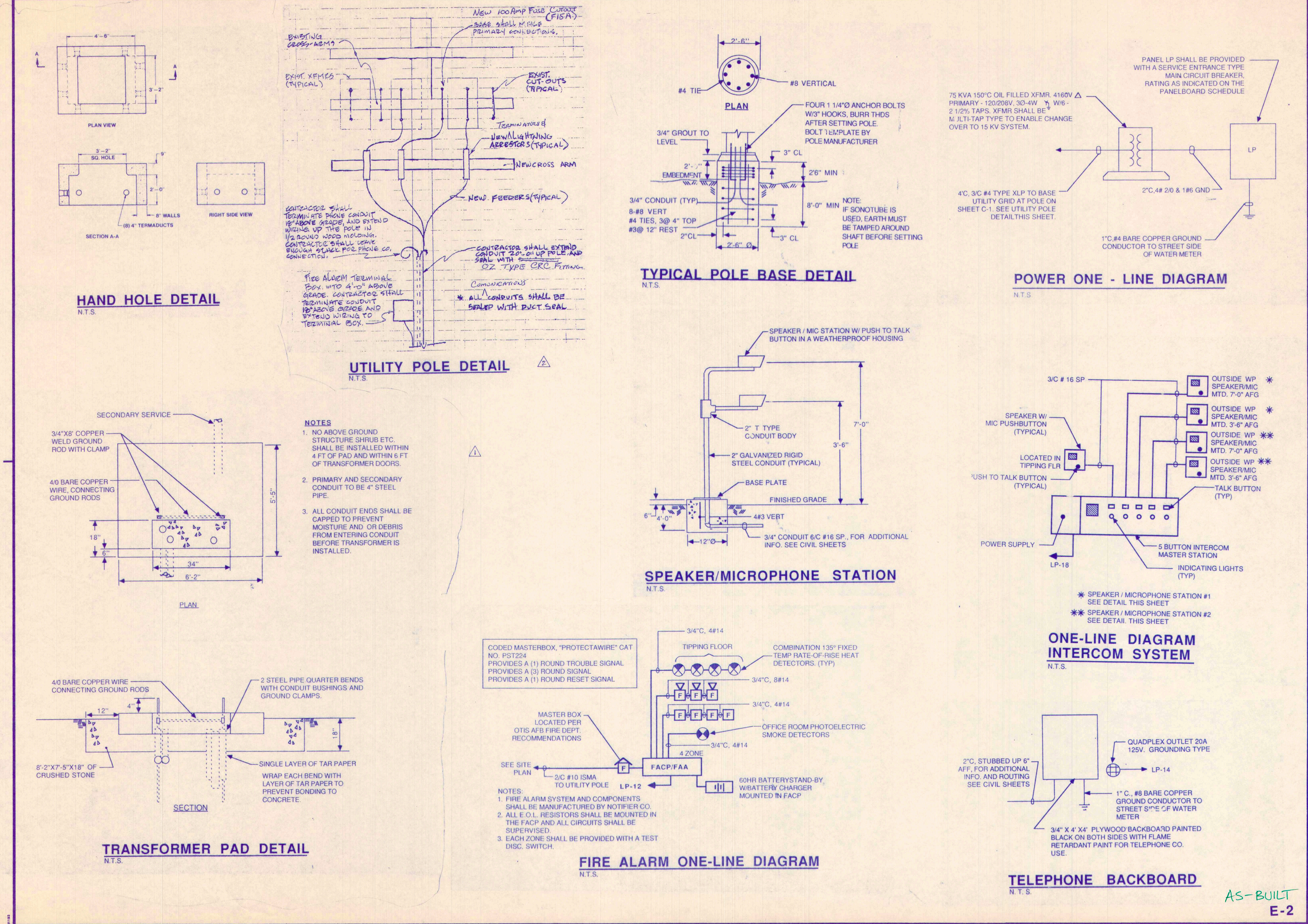
S E A CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine
Wethersfield, Connecticut

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
ELECTRICAL PLAN

Scale AS SHOWN
Date MARCH, 1988
Job no. 506-8712
Designed by MB/WAD
Drawn by MB
Checked by RAK
Sheet E-1
Approved by

Revisions
1 ELEC UPDATE 4/4/88
2 AS-BUILT REVISIONS 10-31-89

File No.


HAND HOLE DETAIL
N.T.S.
PLAN VIEW
SECTION A-A
RIGHT SIDE VIEW
3'-2" SQ. HOLE
8" WALLS
(8) 4" TERMADUCTS
New 100Amp Fuse Cutout (FISA)
BASE SHALL MAKE PRIMARY CONNECTIONS.
EXISTING CROSS-ARMS
EXIST. XFMRS (TYPICAL)
EXIST. CUT-OUTS (TYPICAL)
Terminators & New Lightning Arrestors (Typical)
New Cross Arm
New Feeders (Typical)
Contractor shall terminate phone conduit 18" above grade, and extend wiring up the pole in 1/2 round wood molding. Contractor shall leave enough slack for phone co. connection.
Contractor shall extend conduit 20'-0" up pole and seal with OZ TYPE CRC Fitting.
Fire alarm terminal box, into 4'-0" above grade. Contractor shall terminate conduit 18" above grade and extend wiring to terminal box.
Communications
* All conduits shall be sealed with duct seal
UTILITY POLE DETAIL
N.T.S.
2'-6"
#4 TIE
#8 VERTICAL
PLAN
FOUR 1 1/4"Ø ANCHOR BOLTS W/3" HOOKS, BURR THDS AFTER SETTING POLE. BOLT TEMPLATE BY POLE MANUFACTURER
3/4" GROUT TO LEVEL
3" CL
2'6" MIN
EMBEDMENT
3/4" CONDUIT (TYP)
8-#8 VERT
#4 TIES, 3@ 4" TOP
#3@ 12" REST
8'-0" MIN
2"CL
3" CL
2'-6" Ø
NOTE: IF SONOTUBE IS USED, EARTH MUST BE TAMPED AROUND SHAFT BEFORE SETTING POLE
TYPICAL POLE BASE DETAIL
N.T.S.
PANEL LP SHALL BE PROVIDED WITH A SERVICE ENTRANCE TYPE MAIN CIRCUIT BREAKER, RATING AS INDICATED ON THE PANELBOARD SCHEDULE
75 KVA 150°C OIL FILLED XFMR. 4160V PRIMARY - 120/208V, 3Ø-4W W/6 - 2 1/2% TAPS. XFMR SHALL BE MULTI-TAP TYPE TO ENABLE CHANGE OVER TO 15 KV SYSTEM.
LP
4'C, 3/C #4 TYPE XLP TO BASE UTILITY GRID AT POLE ON SHEET C-1. SEE UTILITY POLE DETAIL THIS SHEET.
2"C,4# 2/0 & 1#6 GND
1"C,#4 BARE COPPER GROUND CONDUCTOR TO STREET SIDE OF WATER METER
POWER ONE - LINE DIAGRAM
N.T.S
SECONDARY SERVICE
3/4"X8' COPPER WELD GROUND ROD WITH CLAMP
4/0 BARE COPPER WIRE, CONNECTING GROUND RODS
5'-5"
18"
6"
34"
6'-2"
PLAN
NOTES
1. NO ABOVE GROUND STRUCTURE SHRUB ETC. SHALL BE INSTALLED WITHIN 4 FT OF PAD AND WITHIN 6 FT OF TRANSFORMER DOORS.
2. PRIMARY AND SECONDARY CONDUIT TO BE 4" STEEL PIPE.
3. ALL CONDUIT ENDS SHALL BE CAPPED TO PREVENT MOISTURE AND OR DEBRIS FROM ENTERING CONDUIT BEFORE TRANSFORMER IS INSTALLED.
SPEAKER / MIC STATION W/ PUSH TO TALK BUTTON IN A WEATHERPROOF HOUSING
2" T TYPE CONDUIT BODY
2" GALVANIZED RIGID STEEL CONDUIT (TYPICAL)
BASE PLATE
FINISHED GRADE
7'-0"
3'-6"
4'-0"
4#3 VERT
12"Ø
3/4" CONDUIT 6/C #16 SP., FOR ADDITIONAL INFO. SEE CIVIL SHEETS
SPEAKER/MICROPHONE STATION
N.T.S.
3/C # 16 SP
SPEAKER W/ MIC PUSHBUTTON (TYPICAL)
LOCATED IN TIPPING FLR
PUSH TO TALK BUTTON (TYPICAL)
OUTSIDE WP SPEAKER/MIC MTD. 7'-0" AFG *
OUTSIDE WP SPEAKER/MIC MTD. 3'-6" AFG *
OUTSIDE WP SPEAKER/MIC MTD. 7'-0" AFG **
OUTSIDE WP SPEAKER/MIC MTD. 3'-6" AFG **
TALK BUTTON (TYP)
POWER SUPPLY
LP-18
5 BUTTON INTERCOM MASTER STATION
INDICATING LIGHTS (TYP)
* SPEAKER / MICROPHONE STATION #1 SEE DETAIL THIS SHEET
** SPEAKER / MICROPHONE STATION #2 SEE DETAIL THIS SHEET
ONE-LINE DIAGRAM INTERCOM SYSTEM
N.T.S.
4/0 BARE COPPER WIRE CONNECTING GROUND RODS
2 STEEL PIPE QUARTER BENDS WITH CONDUIT BUSHINGS AND GROUND CLAMPS.
12"
4"
18"
8'-2"X7'-5"X18" OF CRUSHED STONE
SINGLE LAYER OF TAR PAPER
WRAP EACH BEND WITH LAYER OF TAR PAPER TO PREVENT BONDING TO CONCRETE.
SECTION
TRANSFORMER PAD DETAIL
N.T.S.
CODED MASTERBOX, "PROTECTAWIRE" CAT NO. PST224
PROVIDES A (1) ROUND TROUBLE SIGNAL
PROVIDES A (3) ROUND SIGNAL
PROVIDES A (1) ROUND RESET SIGNAL
3/4"C, 4#14
TIPPING FLOOR
COMBINATION 135° FIXED TEMP RATE-OF-RISE HEAT DETECTORS. (TYP)
3/4"C, 8#14
3/4"C, 4#14
OFFICE ROOM PHOTOELECTRIC SMOKE DETECTORS
3/4"C, 4#14
4 ZONE
MASTER BOX LOCATED PER OTIS AFB FIRE DEPT. RECOMMENDATIONS
SEE SITE PLAN
2/C #10 ISMA TO UTILITY POLE
FACP/FAA
LP-12
60HR BATTERYSTAND-BY W/BATTERY CHARGER MOUNTED IN FACP
NOTES:
1. FIRE ALARM SYSTEM AND COMPONENTS SHALL BE MANUFACTURED BY NOTIFIER CO.
2. ALL E.O.L. RESISTORS SHALL BE MOUNTED IN THE FACP AND ALL CIRCUITS SHALL BE SUPERVISED.
3. EACH ZONE SHALL BE PROVIDED WITH A TEST DISC. SWITCH.
FIRE ALARM ONE-LINE DIAGRAM
N.T.S.
QUADPLEX OUTLET 20A 125V. GROUNDING TYPE
LP-14
2"C, STUBBED UP 6" AFF, FOR ADDITIONAL INFO. AND ROUTING SEE CIVIL SHEETS
1" C., #8 BARE COPPER GROUND CONDUCTOR TO STREET SIDE OF WATER METER
3/4" X 4' X4' PLYWOOD BACKBOARD PAINTED BLACK ON BOTH SIDES WITH FLAME RETARDANT PAINT FOR TELEPHONE CO. USE.
TELEPHONE BACKBOARD
N. T. S.

S E A CONSULTANTS INC.
Engineers/Architects
Cambridge, Massachusetts South Portland, Maine Wethersfield, Connecticut

Revisions

UPPER CAPE REGIONAL TRANSFER STATION
FALMOUTH, MASSACHUSETTS
ELECTRICAL DETAILS

Scale AS SHOWN
Date MARCH 1988
Designed by
Drawn by
Checked by
Approved by

AS-BUILT

File No.

E-2

APPENDIX E

Regional Waste Summary Information

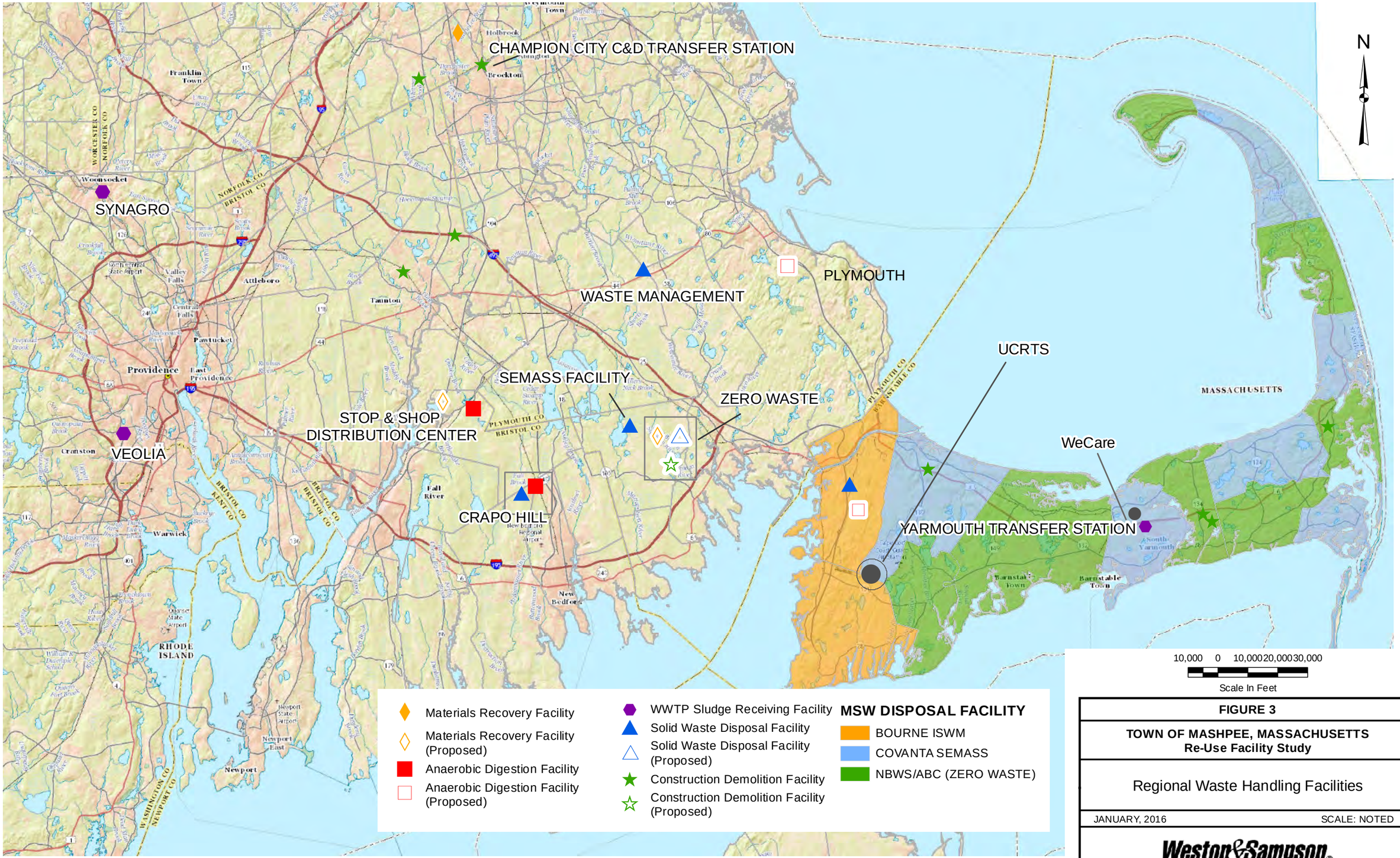


FIGURE 3

TOWN OF MASHPEE, MASSACHUSETTS
Re-Use Facility Study

Regional Waste Handling Facilities

JANUARY, 2016 SCALE: NOTED

Weston & Sampson

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2014 Cape Cod Solid Waste Summary Table

		MSW		Food Waste	Recycling	
Town	**Collection Method**	**Disposal Location**	**Tonnage (CY2014)**	**Est. Tonnage**	**Tonnage (CY2014)**	**Single Stream**
Barnstable	Residential Drop-off	NBWS / ABC Disposal	9,245	457	2521	Yes
Bourne	Curbside (Town Operated)	Bourne ISWM	5,527	226	1818	Yes
Brewster	Residential Drop-off	Covanta SEMASS	1,311	356	737	No
Chatham	Residential Drop-off	Covanta SEMASS	5,236	820	849	No
Dennis	Residential Drop-off	NBWS / ABC Disposal	3,746	291	1354	No
Eastham	Residential Drop-off	Covanta SEMASS	3,021	233	687	No
Falmouth	Curbside (Allied Waste)	Bourne ISWM	11,589	1,446	2679	Yes
Harwich	Residential Drop-off	NBWS / ABC Disposal	4,472	702	941	No
Mashpee	Residential Drop-off	NBWS / ABC Disposal	3,563	993	836	Yes
Orleans	Residential Drop-off	NBWS / ABC Disposal	2,155	889	572	No
Provincetown	Curbside (Town Operated)	NBWS / ABC Disposal	2,520	1,099	1591	Yes
Sandwich	Residential Drop-off	Covanta SEMASS	3,129	1,463	1563	No
Truro	*Residential Drop-off*	Covanta SEMASS	*2,000*	*53*	560	No
Wellfleet	Residential Drop-off	NBWS / ABC Disposal	1,309	164		No
Yarmouth	Residential Drop-off	Covanta SEMASS	8,370	339	1418	No
	Total:		67,194	9,531	18,126	

Note: Table based on information published by MassDEP and received from Cape Cod Commission.

APPENDIX F

Market Study and Valuation Assessment

RKG ASSOCIATES INC

MARKET STUDY AND VALUATION ASSESSMENT OF THE UPPER CAPE REGION TRANSFER STATION ON JOINT BASE CAPE COD IN SANDWICH, MASSACHUSETTS

JANUARY 14, 2016

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Economic Planning and Real Estate Consultants

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I. EXECUTIVE SUMMARY

RKG Associate, Inc. was retained by Weston and Sampson to identify reuse options for the improvements in place at the Upper Cape Regional Transfer Station (UCRTS) on an 18.87-acre parcel in Sandwich, Massachusetts on the southern portion of the Massachusetts Military Reservation, commonly known as Joint Base Cape Cod (JBCC). The UCRTS facility (improvements, only) is jointly owned by the Towns of Bourne, Falmouth, Mashpee and Sandwich[1], and had been operational as a multi-town municipal waste transfer facility under an inter-municipal agreement beginning in 1987.

The UCRTS initiated with a long-term contract for solid waste disposal with SEMASS, an energy from waste disposal site in Rochester, Massachusetts that started in 1988; in conjunction with a transportation contract with Massachusetts Coastal Railroad These contracts after a few extensions expired at the end of 2014, and the individual towns of the UCRTS negotiated new, but separate, 10-year agreements for municipal solid waste disposal, and no longer had any need for the UCRTS, and subsequently closed the facility in January, 2015. The Towns also extended the inter-municipal agreement for three years (June 2018).

The "fee interest"[2] in the 18.87 acre site is owned by the Commonwealth of Massachusetts and a "leasehold interest" was granted to the United States Department of Air Force, which in turn provided a "consent agreement" to allow for the development of the UCRTS. Another condition of the consent agreement includes the removal of all improvements within two years of nonuse of the facility, and restore the site to a condition satisfactory to the Air Force. The Air Force, however, is in the process of "excessing" the UCRTS parcel. It is unknown if other areas at JBCC are also being excessed by the Air Force, or their reuse planning initiatives.

RKG's role in this project was to evaluate market conditions as it relates to potential "non-waste" uses or more traditional industrial uses, as allowed by current zoning, based on supply and demand indicators, as well as other site and locational characteristics that can influence value. To this end, RKG evaluated socio-economic characteristics of the Upper Cape region, as well as real estate market conditions. Key characteristics of the site, its location and adjacent neighborhood were evaluated, and listing and sales data were also collected and reviewed.

The purpose of this report is to provide Weston and Sampson and the UCRTS Board of Managers with the results of the market study analysis, and a strategy for potential reuse of the site and/or improvements. In turn, a preliminary range in value is presented for the "fee interest" in the site, as well as a value range for the improvements, drawn from sales data. The following highlights key findings, and more details are contained in the report that follows.

[1] Collectively referred to as the Upper Cape region.
[2] The absolute, legal possession and ownership of land, property, or rights, including mineral rights. A fee interest can be sold (in its entirety or in part) or passed on to heirs or successors.

1. Locational, Site and Improvement Characteristics

UCRTS is centrally located in the Upper Cape region in a remote area of JBCC, with no direct access to the major highway network, but rather through a series of side streets and roads. The site is about 5 miles from Falmouth village and 7 or so miles from the Bourne Bridge, and almost 4 miles from Mashpee Commons. Many of the adjacent uses are military and land conservation with some residential nearby. In essence the location is relatively poor for any high value industrial/commercial uses, and lacks the capability for a user to cluster with any similar users, as is the case with business parks. It is, however, a somewhat hidden, if not ideal, location for low-value industrial uses, such as waste transfer, bulk storage and the like.

Zoning allows only for a select number of agriculture, industrial, and municipal uses, including bulk storage/ warehousing and contractor yard by-right, and also solar arrays and a transfer station with a special permit. Typical uses found at light-industrial or business parks, such as light manufacturing or professional office are not allowed.

Figure 1 – UCRTS Location

The building improvement for a 19-acre site is relatively minimal in that it has about 7,600 SF of useable area. However, the yard areas are improved with approximately 160,000± SF of asphalt or concrete covering. All utilities are available to the building; however, all mechanicals would need to be upgraded for reuse. The condition of the improvements is fair, and they appear to be about 80 percent depreciated. The reported cost of the improvements was $1.4 million in 1989, suggesting that the depreciated book-value would be less than $300,000.

Given the specialty design of the building as a truck-to-rail trash transfer facility, reuse for other alternatives would be fairly limited to storage and warehouse, although excess land would be available for outside storage. The rail-head at the site, however, represents a unique element that is absent at other sites in the Upper Cape communities, although rail utilization on Cape Cod for industrial purposes other than trash hauling is reportedly nominal.

2. Socio-Economic Trends and Projections

In 2013, population in the Upper Cape region totaled over 85,900 persons which was almost the same as in 2010, and the number of households (35,670 units) was slightly lower than in 2010. Over the prior decade population and household growth in the Upper Cape region was

much slower than the growth experienced during the 1990s. Housing production increased at the same rate during the 1990s and 2000s, but slowed significantly since 2010, although more seasonal homes has resulted than new housing.

Total employment in the Upper Cape Region increased from over 20,000 jobs in 1985 to over 32,500 jobs in 2013 reflecting a 62 percent increase. Similar to demographic trends, almost 80 percent of the growth occurred during the 1990s, while only 15 percent occurred prior to 2007. Employment in 2013 was about 2 percent higher than in 2007 (31,800) surpassing the pre-recession levels.

However, this recovery was only experienced in select sectors including Health Care, Administrative Services, and Accommodation and Food Services. Other sectors, such as Construction, Manufacturing, and Wholesale Trade had employment levels in 2013 below those in 2001. These industry sectors occupy industrial-type buildings, suggesting excess capacity exists in the market given the loss of jobs.

The Upper Cape region ranked on-par in relation to the region in terms of those businesses that occupy industrial buildings, and was strongest in the Manufacturing and Wholesale Trade sectors, despite employment declines. Its weakness was evident in the Transportation and Warehouse Sector.

Employment projections to 2022 for the Upper Cape region indicate an increase of 12 percent, and most of the gains are projected for those sectors that use office and commercial-type buildings. Employment in the Construction industry is projected to increase as well as some other sectors that use industrial-type buildings, and a need for perhaps 100,000 SF of new industrial-type building area may result over the next 8 to 10 years.

3. Real Estate Market Conditions

The industrial base in each of the communities of the Upper Cape region is relatively small, and the average value in 2015 ranged from $360,000 to $685,000 per parcel (land and building). In most cases, these average values were lower than in 2010, suggesting no recovery in this sector.

The industrial market is primarily limited to small users seeking building/unit sizes of 1,000 to 3,000 SF and speculative new development is occurring. Buildings larger than 5,000 SF are more difficult to lease/sell, and in some cases owners of larger buildings consider subdividing them into smaller increments. Demand for larger building is targeted more toward end-users provided a right fit can be made.

Comparing the amount of available industrial space (176,100 SF) on the market with the potential need (100,000 SF) from industrial-building employment projections suggest an ample supply is (or will be) available to meet this forecasted demand. In other words, the current supply of available industrial buildings accounts for about 80 percent more than the forecasted building needs by 2022.

Sale prices for larger industrial buildings (20,000 or more) ranged from $30 to $40/SF, while prices of mid-sized buildings (5,000 to 11,000 SF) were in the $80 to $90/SF range. Industrial condominiums built in the mid-to-late 1980s had an average selling price of $83/SF, while those built in the early 2000s, had an average price of $117/SF.

Almost half the industrial building transfers over the last five years, had buildings that contributed marginally to the overall sales value, as they were subsequently demolished or repurposed after the sale. Three had lot sizes of five acres or more and two were purchased by the Stream-ship Authority to alleviate its parking needs. Only two transfer had a building(s) reused for its same purpose, however, the improvement only accounted for between 8 to 15 percent of the sales value, as the remaining value was associated with the excess land. Effectively, the adjusted improvement value ranged from $30 to $40/SF of building area, and the adjusted land value ranged from $53,000 to $90,000 per acre.

Sales of vacant industrial land in Falmouth ranged from $125,000 to $160,000 per acre, although the Steamship Authority paid up to $230,000 per acre. The asking price for small lots (less than 2 acres) ranged from $220,000 to $300,000 per acre, while larger parcels (4 to 6 acres) had asking prices of $100,000 to $170,000 per acre. Sales of larger tracts including some with improvements ranged from $45,000 to $90,000 per acre. Environmental constraints such as topography, soils and wetlands influence values.

4. Reuse Options for UCRTS

Certain marketability issues affect the reuse of the site and improvements, including:

- Ownership of the leasehold interest; namely what is the status and timing of the Air Force excessing the site?
- The UCRTS according to the consent agreement must be removed when vacated, and the premises restored to what condition? And who makes that determination? And will that requirement be passed onto the next user?
- The lack of a long-term leasehold interest would affect the ability of a private-sector entity obtaining financing to make improvements
- Would the municipal or state entities involved assist in fast-tracking any permit requirements for a desired user?
- Who would make a final determination of any potential bid process in selecting a desired use(r)? Mass Development or UCRTS?

These issues will be addressed as the project moves forward, and the following table summarizes some reuse options to consider. Reuse of the building and lay-down areas may be realized in two options; while only portions of the lay-down area in the others (and not the building), such that the improvement would need to be removed and site restored.

Table 1 – Reuse Options for the UCRTS

Proposed Use	Proponent	Improvement Use	Rail Use	Risk to UCRTS
Bulk Storage Center for Commodity Items	Mass Coastal Rail	Lay-down area (portion); not building	Yes	Remove & restore site; Reliquish control
Transfer Station; Recycling & C&D	Carl Cavossa	Building; Lay-down area	Option	Relinquish control
Photovoltaic Solar Array	N/A	Lay-down area (portion); not building	No	Remove & restore site; Reliquish control
Tranportation; Bulk Storage; Waste Tranfer by end-user	Local Commer-cial Broker	Possibly lay-down area & building	Option	Relinquish control
Commuter Rail; Inter-modal & parking	N/A	Possibly lay-down area; not building	Yes	Remove & restore site; Reliquish control

5. Valuation Assessment

As vacant industrial land, the site would have a value of between $50,000 and $70,000 per acre based on sales data. The high end of the range would be associated with any premium for the rail-head given the shortage of such sites in the Upper Cape region. For the 18.9-acre site, the value of the "fee interest" in the vacant land would range from $950,000 to $1.3 million.

With regards to the improvements in place, namely a 7,600 SF high-bay, steel building and 160,000 SF of lay-down area in relatively fair condition, RKG believes that the value would be limited by the eventual reuse. The improvement value at a few sales indicated a range from $30 to $40/SF of building area suggesting a value of perhaps $230,000 to $300,000. The depreciated book-value of the initial investment is perhaps $290,000, closer to the high-end of the range.

Reuse of the improvements if practical by a future end-user would simply be for cost-avoidance, given their substandard conditions and need for modernization and upgrades. Realistically, the improvements have a negative value since they are to be removed once vacated, and the site returned to prior conditions. That cost would likely be more than any value/income attributed to them.

II. MARKET STUDY AND VALUATION ASSESSMENT

A. Upper Cape Regional Transfer Station Background

The Towns of Bourne, Falmouth, Mashpee and Sandwich entered into an inter-municipal agreement in June 1987 to jointly construct, operate and maintain a solid waste rail transfer station (UCRTS) on a portion of Otis Air Force Base. However, the UCRTS Board of Managers closed the facility in January 2015, after nearly 26 years of operation, since each Town found alternative and less costly ways to transfer and dispose of their municipal solid waste (MSW), rather than continuing operating the UCRTS. It was also around this time that the prior UCRTS disposal contract with SEMASS in effect since 1985 terminated as well as a transportation contract with Mass Coastal Railroad.

1. Ownership and Consent Agreement

The "fee interest" in the UCRTS site is owned by the Commonwealth of Massachusetts and a "leasehold interest" was extended to the United States Department of the Air Force as part of the Otis Air National Guard (ANG) Base. In turn, the Air Force provided a "consent agreement" to the Towns of Bourne, Falmouth, Mashpee and Sandwich (grantee) "*to construct, use, maintain, control, operate and repair a waste and refuse transfer station…referred to as a "structure", across, over and under approximately 18.87 acres".*

The consent agreement was originally signed in 1987, and was also extended in September 2007. The consent agreement does not have any termination date, but "*the terms and conditions of this consent shall be extended to and be binding upon the successors and assigns of the grantee."*

The consent agreement "*may be terminated by the Secretary of the Air Force … for nonuse for a period of two years, or for abandonment.*" Furthermore, "*upon relinquishment, termination, revocation, forfeiture or annulment of the consent herein granted, the grantee shall vacate the premises, remove all property of the grantee therefrom, and restore the premises to a condition satisfactory to the officers having immediate jurisdiction…If the grantee shall fail or neglect to remove side property and so restore the premises, then at the option of the Secretary of the Air Force, the said property shall either become property of the United States without compensation, therefore, or the Secretary of Air Force may cause it to be removed and the premises to be restored at the expense of the grantee, and no claim for damages against the United States…shall be created by or made on account of such removal and restoration*"

The Air Force is currently in the process of excessing the portion of Otis ANG Base on which the UCRTS improvements are sited. If no other federal agency makes a claim for the excessed portion, then RKG assumes the site reverts to the Commonwealth of Massachusetts, which in turn would reportedly shift management responsibilities to Mass Development. This change or elimination in the leasehold interest in the UCRTS site may delay potential reuse for the site and improvements. It is unknown if other areas of JBCC are also being excessed, and what planning measures are in place or being considered to expedite reuse.

2. Inter-municipal Agreement

The original inter-municipal agreement was signed in June 1987 and subsequently amended in October 1987, December 1986 and June 2008. Recently, the Towns amended (or are in the process of amending) the agreement in June 2015 as a result of the closure of the UCRTS, and the term will expire in June 2018. The agreement allows the Towns to seek reuse options in light of the closure. The Town of Falmouth was appointed the "Lead Town" to enter into contracts, borrow funds, hold title to facility and equipment.

In the event of termination at the end of the term or otherwise, the managers shall "*obtain an appraisal…of the existing Site improvements, excluding the land but including all structures, equipment, supplies, materials associated therewith, and said improvements shall thereupon be disposed of …with the approval of the Managers:*

- *Any member Town, or combination of Towns, shall have the right of first option to purchase at the appraised value.*
- *If no party exercises its right of first option and the assets have market value, the assets (excluding the land) shall be sold by the Managers*
- *If said facility shall be deemed to have no market value or if the Managers shall determine it constitutes a nuisance or liability, the Managers may demolish and dispose of the same. The cost… shall be borne by the Towns."*

3. Conclusion

There are ownership issues that would affect the marketability and financing of any potential reuse option by the private sector, since the UCRTS has no fee interest to transfer, and the leasehold interest in the land granted to the US Air Force remains in flux. Also, it is unknown whether a potential user would want to deal with a four-town entity to reuse the site and improvements. It is also unclear to what extent the Air Force or Mass Development would require the UCRTS Board to "restore" the site, and its associated cost.

B. Neighborhood, Zoning and Site Description

This section identifies key aspects of the UCRTS location, its zoning and its improvements.

1. Location, Access and Neighborhood

UCRTS is located in a relatively isolated portion of JBCC, in what appears to be a centralized location in the Upper Cape region (see Figure 2). Access to the site is somewhat convoluted, traveling over a series of JBCC roads and turns (General Boulevard, Kittridge and Simpkin Roads) to get to Witheys Drive, or the uncontrolled entrance to the UCRTS. It is over a mile north of Nathan Ellis Highway (Route 151) via Sandwich Road in Falmouth. (See Figure 2)

Route 151 is a major east/west connector road that parallels the northern boundary of Falmouth, linking Route 28 in North Falmouth to Route 28 in Mashpee (near Mashpee Commons). Sandwich Road leads south to Falmouth village and the Woods Hole ferry terminal, about 5 miles from UCRTS. The Bourne Bridge is about 7 miles north on Route 28 that connect to Interstates 495 and 195 in Wareham; or the Sagamore Bridge another few miles

further that connect to Route 3 that heads north towards Boston, or alternatively to Route 6 that extends east along the northern side of Cape Cod.

Figure 2 – UCRTS Location in the Upper Cape

The surrounding neighborhood on JBCC is sparsely developed but contains a sewer-treatment plant for the base, as well as an experimental septic/sewer research area, and a few small buildings. The west side of Sandwich Road has a nature preserve (Crane Wildlife Management Area) while the east side has a number of residential side streets, as well as the Paul Harney Golf Club (see Figure 3). The Otis airfield at JBCC is also nearby.

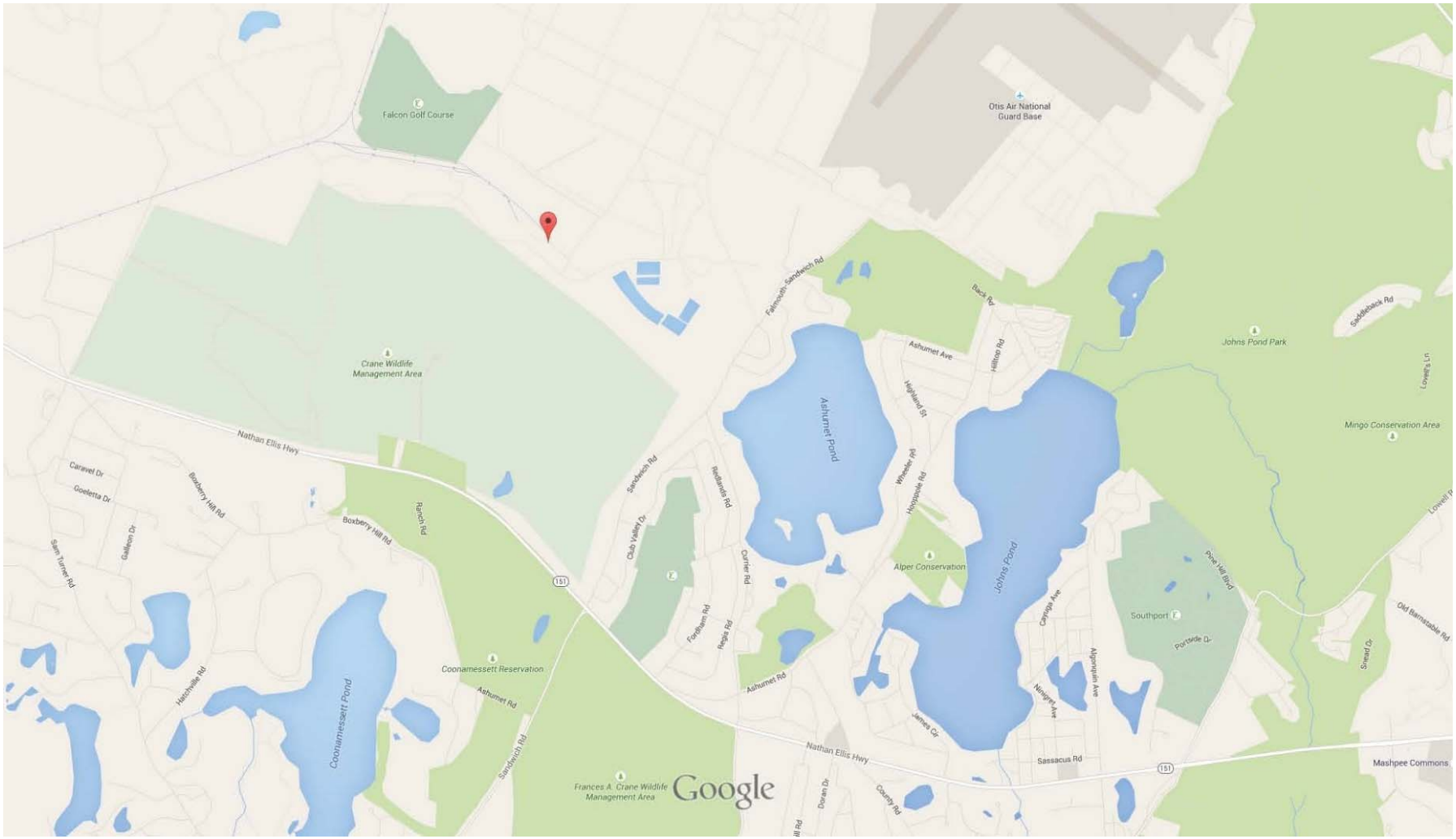

Figure 3 – UCRTS Location and Surrounding Neighborhood

2. Zoning

UCRTS is located in the Town of Sandwich and within the "Government" zoning district, whose purpose is "*to provide necessary governmental functions, public recreation on publicly owned land"* (See Figure 4). The site (or portion) also appears to be within the "Water Resources Overlay District". The allowed uses in the Government district are fairly limited to agriculture, industrial and institutional uses, as shown in Table 2. A disposal and recycling facility (but not a junk yard) would be allowed subject to a special permit as well as a photovoltaic solar array.

Typical light-industrial or business park uses are not allowed in the Government district, including research laboratory, professional or medical office, warehouse sales, light manufacturing and major commercial or industrial complex. Recreational or cultural uses also not allowed, nor are any commercial retail or service uses.

Table 2 – Town of Sandwich: Allowed Uses in the Government District

Use	Uses allowed by right	Uses by special permits
Agriculture		
Farm	x	
Farm Stand	x	
Industrial		
Bulk Storage/Warehouse	x	
Contractor Yard	x	
Disposal & Recycling Facility		x
Heliport	x	
Research laboratory, Chemical, bacteriological lab		x
Solar Photovoltaic Installation, Large-scale Ground Mounted		x
Telecommunications Facility, Wireless		x
Use of toxic or hazardous materials		x
Wastewater Treatment Facility		x
Institutional		
Municipal Uses	x	
Religious Uses	x	
School-Public, Sectarian, Denominational, Non-Profit Educational Corp	x	
Source: Town of Sandwich & RKG Associates, Inc.		

Other uses such as automotive or boat repair and storage are also not allowed, nor are any residential uses. It should be noted that based on a discussions with the Sandwich Town Planner (Blair Haney), a private entity could operate a commercial facility such as a transfer station in the Government district, provided the property remains under public ownership.

Table 3 provides the density and dimensional criteria associated with development in the Government district.

Table 3 – Town of Sandwich: Dimensional Requirements-

Intensity of Use	
Minimum lot size	60,000 square feet
Minimum lot frontage	200 feet
Minimun front yard	50 feet
Minimum side & rear yard	45 feet
Maximum lot coverage	25 feet
Maximum building height	25 feet
Maximum shape factor	22 [1]
[1] Perimeter squared/ minimum lot area	
Source: Town of Sandwich & RKG Associates, Inc.	

In short, the UCRTS site and improvements appear to be conforming to zoning, excepting perhaps its building height. From a reuse perspective only select uses such as bulk storage / warehouse, contractor yard, and municipal uses are allowed by right, while waste transfer and photovoltaic solar arrays are allowed with a special permit. Typical uses found in business parks such as light-manufacturing, research and development, professional or medical office, or other uses such as boat repair and storage are not allowed, unless there was a zoning change.

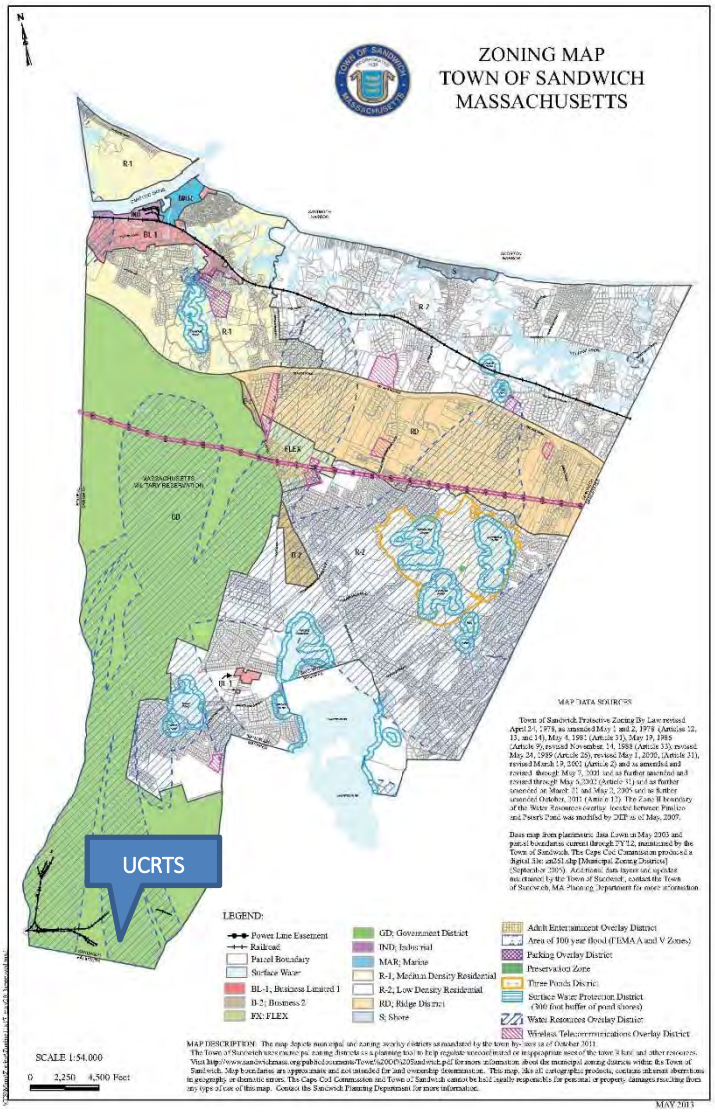

Figure 4 – Town of Sandwich Zoning Map

3. UCRTS Site and Improvement Characteristics

The 18.87-acre site is relatively flat, and slopes up to the building at the rear, in order to allow rail-cars to pass by at ground level and be loaded from an elevated tipping-floor level within the building. The UCRTS building is a high-bay, steel building constructed in 1989 and contains approximately 8,250 square feet of roofed area including 7,600 square feet (SF) of useable building area based on the following calculations[3]:

Transfer Station -	78.25 feet x 90 feet -	7,040 SF
Support space -	20 feet x 30 feet -	600 SF
Rail Car Shed -	16 feet x 72 feet -	1,150 SF

The front of the building has three 24-foot (height) overhead, drive-in doors. There is an elevated support area with an office, locker and bath rooms on the southern side of the building, accessible from the front. A small appendage also houses an emergency generator (non-operable). The overall floor area ratio (FAR) is less than 1 percent.

All utilities are in place including under-ground feeds to the building for electricity (3-phase), telephone and fire alarm; a 2-inch water main; and on-site septic. The site has an underground 2000-gallon fuel tank, and an above-ground propane tank was also observed. A fire hydrant was located at the entrance, although its source is unknown (Sandwich; Falmouth; or JBCC).

The site is also improved with access roads, loading and drop-off areas, and a drive-on scale (not operational). There is a large, built-up asphalt area in front of the building (10,000 SF) and another 150,000± SF lay-down area in the lower yard. The site is also improved with two major rail-lines; however, these improvements are reportedly owned by the Air-Force. The condition of the rail-lines is reportedly substandard and in need of upgrades, whose funding is on hold from MassDOT. Rail service is also available to other areas on JBCC.

Presently, the building is in fair condition and well worn, given its usage as a transfer station for the last 26 or so years. RKG believes major upgrades to the interior especially the break-area would be needed, as well as all mechanicals and utilities (doors, door-operators, HVAC, the scale, and other items). The status of the roof is unknown, but given the age it would likely be in need of repair or replacement soon. The tipping floor was repaired in 2000 at a cost of nearly $385,000 or approximately $55/SF. Total construction cost in 1989 was reported at $1.46 million or over $207/SF of usable building area, or almost $77,400 per acre.

The building appears to be about 75 to 80 percent depreciated, with perhaps 10 years of remaining economic life. The road and yard coverings also appear well worn. In effect the depreciated value of the improvements would range from $290,000 to $365,000, based on its 1989 construction cost.

Figure 5, Figure 6 and Figure 7 on the following pages illustrate the site and building characteristics and condition.

[3] The information in this section was taken from as-built plans prepared by SEA Consultants, dated October1989.

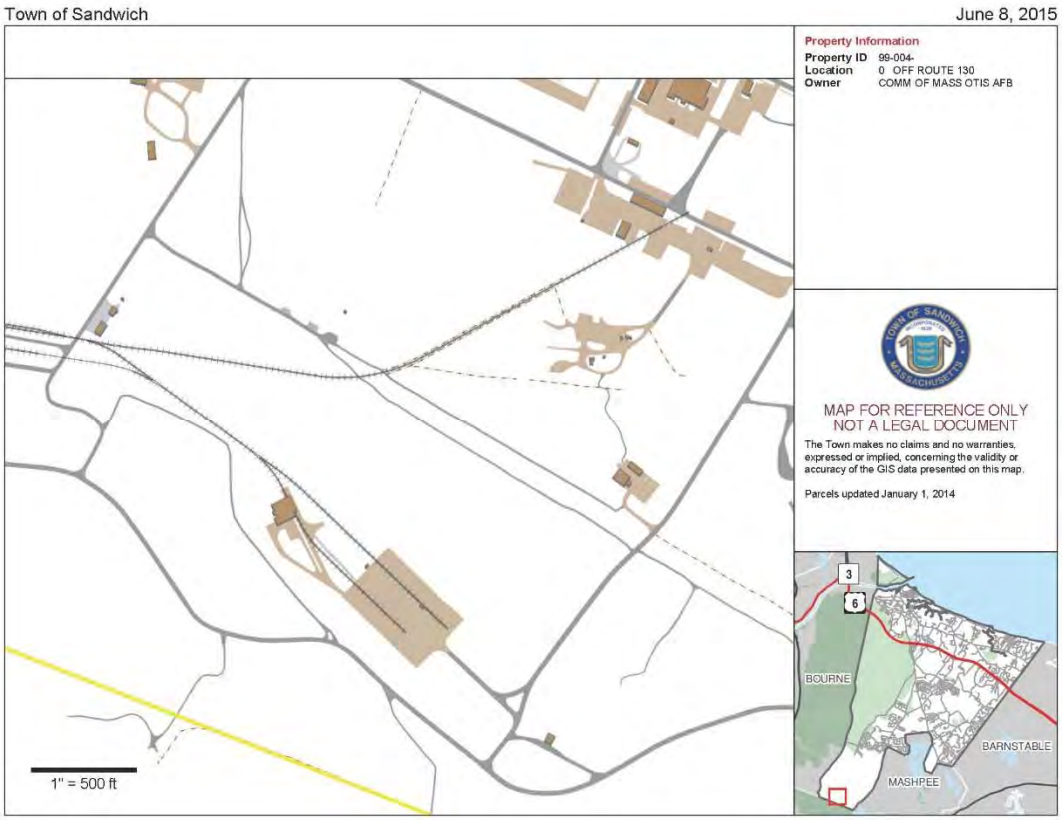

Figure 5 – UCRTS Site Map and Aerial

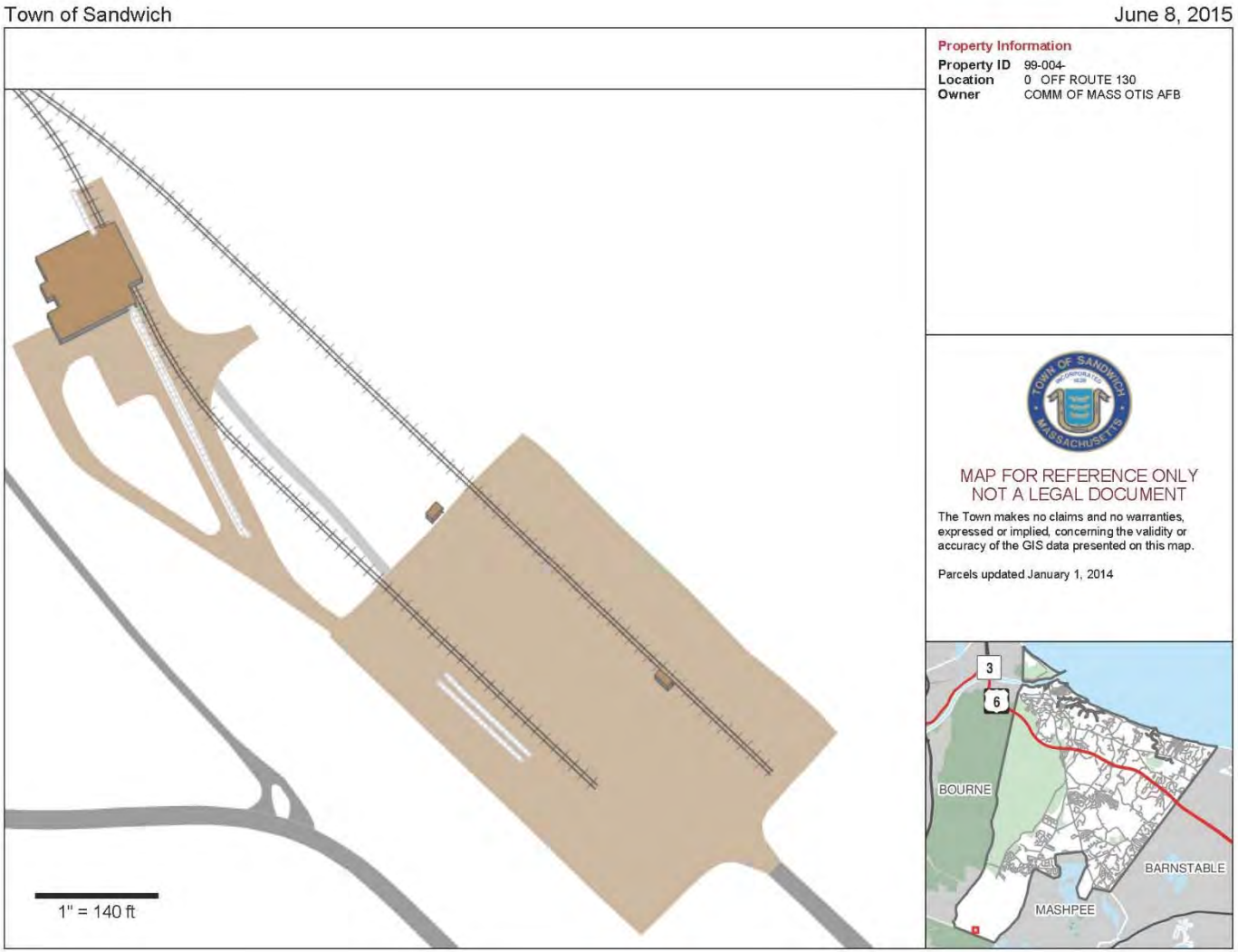

Figure 6 – UCRTS Site Plan from Town of Sandwich GIS

Figure 7 – Photographs of the UCRTS Site and Improvements

4. Conclusion

UCRTS is centrally located in the Upper Cape in a remote area of JBCC, with no direct access to the major highway network on the Cape, but rather through a series of side streets and roads. The site is about 5 miles from Falmouth village and 7 or so miles from the Bourne Bridge, and almost 4 miles from Mashpee Commons. Many of the adjacent uses are military and land conservation with some residential uses nearby, as well as a golf course. In essence the location is relatively poor for any high value industrial/commercial uses, and lacks the capability for a user to cluster with any similar users, as is the case with business parks.

Zoning allows only for a select number of agriculture, industrial, and municipal uses, including bulk storage/warehousing and contractor yard by-right, and also solar arrays and a transfer station with a special permit. Typical uses found at light-industrial or business parks, such as light manufacturing or professional office are not allowed.

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Given the specialty design of the building as a truck-to-rail trash transfer facility, reuse for other alternatives would be fairly limited to storage and warehouse, although excess land would be available for outside storage. The rail-head at the site, however, represents a unique element that is absent at most other sites in the Upper Cape communities, although rail utilization on Cape Cod for industrial purposes other than trash hauling is reportedly nominal.

C. Socio-Economic Conditions

This section identifies select demographic trends in the towns in the Upper Cape region from a review of decennial census data, and estimates provided by American Community Survey. Economic trends and forecasts are also reviewed, from data obtained from the Massachusetts Executive Office of Labor and Workforce Development.

1. Select Demographic Trends

The population of the Upper Cape region increased by 28 percent between 1990 and 2013, as the number of households increased by 38 percent, as shown in Table 4. In both cases, the percentage increases were much higher than indicated in Barnstable County (15 and 23 percent, respectively). However, nearly all the growth occurred during the 1990s in almost all areas.

Housing units on the other hand increased by 26 percent in the Upper Cape region between 1990 and 2013, and by 19 percent in Barnstable County. However, the growth in housing units during the 1990s and 2000s, was more evenly distributed between the two decades, due primarily to the increase in seasonal housing especially during the 2000s. In effect, the growth in year-round population and households was relatively modest during the 2000s, as compared to the gain in housing, specifically seasonal housing. Since 2010, the year-round population

and households declined in nearly all areas, while some growth in housing resulted. In comparison, continued growth in seasonal housing occurred.

Table 4 – Upper Cape Region and Barnstable County: Select Demographic Trends

	US Census			ACS Est	Number Change				Percent Change			
Population	1990	2000	2010	2013	1990-00	2000-10	2010-13	1990-13	1990-00	2000-10	2010-13	1990-13
Bourne	16,064	18,721	19,754	19,729	2,657	1,033	(25)	3,665	17%	6%	0%	23%
Falmouth	27,960	32,660	31,531	31,591	4,700	(1,129)	60	3,631	17%	-3%	0%	13%
Mashpee	7,748	12,946	14,006	14,000	5,198	1,060	(6)	6,252	67%	8%	0%	81%
Sandwich	15,489	20,136	20,675	20,615	4,647	539	(60)	5,126	30%	3%	0%	33%
Upper Cape Region	67,261	84,463	85,966	85,935	17,202	1,503	(31)	18,674	26%	2%	0%	28%
Barnstable County	186,605	222,230	215,888	215,449	35,625	(6,342)	(439)	28,844	19%	-3%	0%	15%
Households												
Bourne	5,898	7,439	7,866	8,047	1,541	427	181	2,149	26%	6%	2%	36%
Falmouth	11,274	13,859	14,069	14,138	2,585	210	69	2,864	23%	2%	0%	25%
Mashpee	3,158	5,256	6,118	6,011	2,098	862	(107)	2,853	66%	16%	-2%	90%
Sandwich	5,557	7,335	7,776	7,476	1,778	441	(300)	1,919	32%	6%	-4%	35%
Upper Cape Region	25,887	33,889	35,829	35,672	8,002	1,940	(157)	9,785	31%	6%	0%	38%
Barnstable County	77,586	94,822	95,755	95,398	17,236	933	(357)	17,812	22%	1%	0%	23%
Housing Units												
Bourne	8,999	9,648	10,805	11,028	649	1,157	223	2,029	7%	12%	2%	23%
Falmouth	18,168	20,055	21,970	22,039	1,887	1,915	69	3,871	10%	10%	0%	21%
Mashpee	7,002	8,325	9,882	9,866	1,323	1,557	(16)	2,864	19%	19%	0%	41%
Sandwich	7,236	8,748	9,476	9,426	1,512	728	(50)	2,190	21%	8%	-1%	30%
Upper Cape Region	41,405	46,776	52,133	52,359	5,371	5,357	226	10,954	13%	11%	0%	26%
Barnstable County	135,192	147,083	160,281	160,486	11,891	13,198	205	25,294	9%	9%	0%	19%
Seasonal Housing												
Bourne	2,187	1,861	2,221	2,388	(326)	360	167	201	-15%	19%	8%	9%
Falmouth	5,627	5,615	7,100	6,902	(12)	1,485	(198)	1,275	0%	26%	-3%	23%
Mashpee	3,212	2,747	3,409	3,624	(465)	662	215	412	-14%	24%	6%	13%
Sandwich	1,203	1,174	1,293	1,598	(29)	119	305	395	-2%	10%	24%	33%
Upper Cape Region	12,229	11,397	14,023	14,512	(832)	2,626	489	2,283	-7%	23%	3%	19%
Barnstable County	46,834	47,016	56,863	58,509	182	9,847	1,646	11,675	0%	21%	3%	25%

Source: US Census; American Community Survey (ACS); & RKG Associates, Inc.

2. Business Formation Trends

Table 5 compares business trends in the Upper Cape region with those in the Cape and Islands Workforce Investment Area (WIA) for select periods. In 2007, the Upper Cape region had over 3,020 businesses including 2,900 private firms, which reflected an increase of 13 percent since 2001, and increases were indicated collectively in each of the building-type groups. Construction, Real Estate, Health Care and Social Services, and Other Services were sectors that experienced growth in businesses of 20 percent or more between 2001 and 2007.

However, the number of businesses declined by 4 percent between 2007 and 2013, and some sectors had a lower number of businesses in 2013 than in 2001, including Manufacturing; Transportation and Warehousing; Finance and Insurance; Real Estate; and Other Services.

Table 5 – Upper Cape Region & Cape & Islands WIA: Establishment Trends

	Upper Cape Region			Percent Change		Cape & Islands WIA			Percent Change	
Establishments by Industry Sector	2001	2007	2013	2001-07	2007-13	2001	2007	2013	2001-07	2007-13
TOTAL	2,674	3,021	2,900	13%	-4%	10,468	11,352	11,075	8%	-2%
GOVERNMENT	5,494	6,104	6,124	11%	0%	405	440	461	9%	5%
PRIVATE	2,574	2,897	2,780	13%	-4%	10,063	10,912	10,614	8%	-3%
Industrial/Flex	814	914	837	12%	-8%	2,857	3,364	3,191	18%	-5%
Construction	311	404	351	30%	-13%	1,213	1,670	1,494	38%	-11%
Manufacturing	86	81	71	-6%	-12%	285	245	215	-14%	-12%
Wholesale Trade	126	127	118	1%	-7%	314	335	297	7%	-11%
Transportation & WHS	55	48	48	-13%	0%	195	189	183	-3%	-3%
Information	46	44	49	-4%	11%	178	163	179	-8%	10%
Admin. & Waste Services	190	210	200	11%	-5%	672	762	823	13%	8%
Office/ Institutional	699	830	939	19%	13%	2,447	2,663	2,952	9%	11%
Finance & Insurance	103	112	96	9%	-14%	381	372	343	-2%	-8%
Real Estate & Rental & Leasing	98	123	94	26%	-24%	429	490	428	14%	-13%
Professional & Tech Services	259	307	321	19%	5%	857	919	899	7%	-2%
Educational Services	27	31	34	15%	10%	68	84	112	24%	33%
Health Care & Social Assistance	212	257	394	21%	53%	712	798	1,170	12%	47%
Commercial & Other	1,034	1,126	973	9%	-14%	4,630	4,762	4,325	3%	-9%
Retail Trade	427	426	396	0%	-7%	1,952	1,906	1,796	-2%	-6%
Arts, Entertainment, & Recreation	64	75	77	17%	3%	260	291	296	12%	2%
Accommodation & Food Services	258	260	278	1%	7%	1,376	1,321	1,363	-4%	3%
Other Services, Ex. Public Admin	285	365	222	28%	-39%	1,042	1,244	870	19%	-30%

Source: ME EOL&WD and RKG Associates, Inc.

3. Employment Trends

Total employment in the Upper Cape Region increased from over 20,000 jobs in 1985 to over 32,500 jobs in 2013, as shown in Figure 8, reflecting a 62 percent increase. Similar to demographic trends, almost 80 percent of the growth occurred during the 1990s, while another 15 percent occurred by 2007. Employment in 2013 was about 2 percent higher than in 2007 (31,800) surpassing the pre-recession levels.

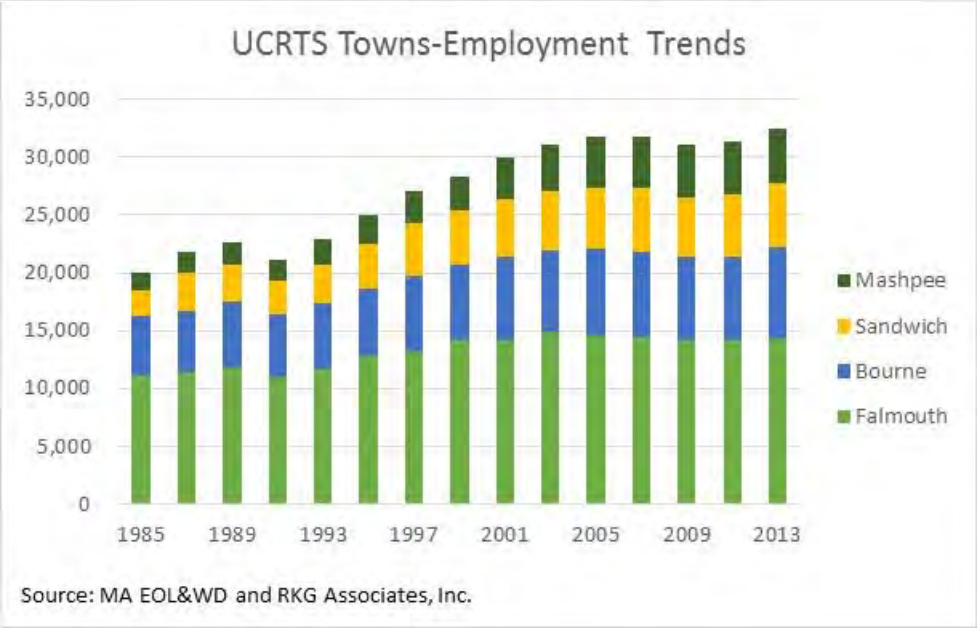


Figure 8 – Employment Trends

Table 6 displays employment trends by industry sector and building type for the Upper Cape region and the Cape and Islands Workforce Investment Area (WIA) for 2001, 2007 and 2013. Since 2007, nearly all the employment growth in the Upper Cape region was in private-sector industries, and the highest percentage increase was in Health Care and Social Assistance, and Accommodation and Food Services. Collectively, the industry sectors that use office-type buildings increased by 6 percent between 2007 and 2013; after an 11 percent growth in the prior period. Industries that use commercial-type buildings, collectively, increased by 5 percent since 2007, and 2 percent in the prior period. For the most part, these percentage increases were similar if not higher than the region in these two groups.

Table 6 – Upper Cape and Cape & Island WIA: Employment by Industry and Building Type

	Upper Cape Region			Percent Change		Cape & Islands WIA			Percent Change	
Employment by Industry Sector	2001	2007	2013	2001-07	2007-13	2001	2007	2013	2001-07	2007-13
TOTAL	29,930	31,810	32,513	6%	2%	102,533	107,010	106,949	4%	0%
GOVERNMENT	5,494	6,104	6,124	11%	0%	15,221	16,165	16,486	6%	2%
PRIVATE	24,436	25,706	26,389	5%	3%	87,312	90,845	90,463	4%	0%
Industrial/Flex	5,502	5,712	5,288	4%	-7%	19,132	20,066	18,920	5%	-6%
Construction	1,903	1,945	1,707	2%	-12%	6,144	7,324	6,346	19%	-13%
Manufacturing	1,196	1,128	953	-6%	-16%	3,265	2,373	2,194	-27%	-8%
Wholesale Trade	587	739	611	26%	-17%	1,540	1,712	1,775	11%	4%
Transportation & WHS	441	362	371	-18%	2%	2,234	2,185	2,257	-2%	3%
Information	496	426	452	-14%	6%	2,275	2,060	1,747	-9%	-15%
Admin. & Waste Services	879	1,112	1,194	27%	7%	3,674	4,412	4,601	20%	4%
Office/Institutional	8,046	8,937	9,497	11%	6%	23,978	26,007	27,072	8%	4%
Finance & Insurance	732	634	551	-13%	-13%	2,917	2,595	2,466	-11%	-5%
Real Estate & Rental & Leasing	440	426	272	-3%	-36%	2,229	1,964	1,597	-12%	-19%
Professional & Tech Services	2,313	2,298	2,417	-1%	5%	4,670	4,628	4,408	-1%	-5%
Educational Services	672	692	630	3%	-9%	1,036	1,013	1,102	-2%	9%
Health Care & Social Assistance	3,889	4,887	5,627	26%	15%	13,126	15,807	17,499	20%	11%
Commercial & Other	10,785	10,952	11,493	2%	5%	42,180	43,260	43,264	3%	0%
Retail Trade	4,766	4,776	5,037	0%	5%	18,704	18,646	17,581	0%	-6%
Arts, Entertainment, & Recreation	813	925	906	14%	-2%	2,559	3,338	3,256	30%	-2%
Accommodation & Food Services	4,206	3,997	4,552	-5%	14%	16,874	16,674	18,309	-1%	10%
Other Services, Ex. Public Admin	1,000	1,254	998	25%	-20%	4,043	4,602	4,118	14%	-11%

Source: ME EOL&WD and RKG Associates, Inc.

Referring to Table 6, employment in those industries that use industrial-type buildings declined by 7 percent in the 2007 to 2013 period, after a 4 percent increase in the prior period, and a similar trend was indicated in the Cape and Islands WIA. The changes during each period varied between industries and period. For instance, construction in the Upper Cape region increased marginally between 2001 and 2007, but declined rapidly during the latter period. Employment in this sector has not recovered to pre-recession levels. Employment in Manufacturing declined in both periods, while Administration and Waste Services increased during both periods.

4. Waste Disposal Business and Employment Trends

Table 7 displays business and employment trends (private sector) in Barnstable County between 2001 and 2014. The number of operating businesses reached a low point of 11 firms in 2002 and a high point of 18 firms in 2008. Employment levels ranged from 94 jobs in 2001 to 167 jobs in 2008. The most recent figures indicated a total of 16 private, waste collection firms in 2014, providing over 130 jobs and average weekly wage of $1,030. The number of

jobs and businesses in the Waste Disposal sector accounted for less than 0.2 percent of the totals for Barnstable County, but the average weekly wage in 2014 was 32 percent higher

Table 7 – Barnstable County: Waste Disposal Industry Trends

Year	Firms	Jobs	AVG Weekly $
2001	12	94	$334
2002	11	101	$461
2003	12	107	$806
2004	14	114	$891
2005	16	129	$899
2006	17	135	$919
2007	17	167	$937
2008	18	167	$972
2009	17	160	$937
2010	17	156	$981
2011	16	124	$999
2012	15	127	$1,036
2013	14	131	$1,063
2014	15	132	$1,030

Source: MA EOL & WD & RKG Associates, Inc.

5. Location Quotient

Table 8 exhibits the location quotient of the Upper Cape region in relation to the Cape and Islands WIA. Those industries with a factor of 1.2 or higher represent strong sectors in the local economy, while those at 0.8 or below are under-represented. Those in between are on par with the regional economy.

Table 8 – Upper Cape Region Location Quotient to Cape & Islands WIA

	Location Quotient		
Employment by Industry Sector	2001	2007	2013
TOTAL	1.0	1.0	1.0
GOVERNMENT	1.2	1.3	1.2
PRIVATE	1.0	1.0	1.0
Industrial/Flex	1.0	1.0	0.9
Construction	1.1	0.9	0.9
Manufacturing	1.3	1.6	1.4
Wholesale Trade	1.3	1.5	1.1
Transportation & WHS	0.7	0.6	0.5
Information	0.7	0.7	0.9
Admin. & Waste Services	0.8	0.8	0.9
Office/Institutional	1.1	1.2	1.2
Finance & Insurance	0.9	0.8	0.7
Real Estate & Rental & Leasing	0.7	0.7	0.6
Professional & Tech Services	1.7	1.7	1.8
Educational Services	2.2	2.3	1.9
Health Care & Social Assistance	1.0	1.0	1.1
Commercial & Other	0.9	0.9	0.9
Retail Trade	0.9	0.9	0.9
Arts, Entertainment, & Recreation	1.1	0.9	0.9
Accommodation & Food Services	0.9	0.8	0.8
Other Services, Ex. Public Admin	0.8	0.9	0.8

Source: ME EOL&WD and RKG Associates, Inc.

Collectively, the sectors that use office-type buildings in the Upper Cape region rated high over the last two periods primarily due to Educational Services and Professional and Technical Services. Manufacturing ranked high in each period, and Wholesale Trade ranked well in two of the three periods, but the other sector that use industrial-type buildings ranked on par or are under-represented locally.

6. Employment Projections and Estimated Supportable Development

RKG utilized the 10-year employment forecasts (2012 to 2022) for the Cape and Islands WIA, prepared by the Massachusetts Executive Office of Labor and Workforce Development, as a basis with which to forecast employment changes and resulting supportable building demand for the Upper Cape region, and adjusted for select industries to a base year of 2013. As shown in Table 9, total employment in the select industries in the Cape and Islands WIA is forecasted to increase by 11 percent by 2022, for a net gain of nearly 9,900 jobs from 2013. The select industries that use office-type buildings are forecasted to increase by 35 percent, while select industries that use commercial-type buildings are forecasted to increase by 11 percent. The sectors that use industrial-type buildings are collectively forecasted to increase by 8 percent.

Appling a range in capture rates reflective of the Upper Cape's representation of employment in the Cape and Islands WIA to the projected employment gains by select industry sectors, provides an indication of new employment that may occur in Upper Cape region by 2022. This may range from 3,220 to 3,520 jobs by 2022, or an increase of 12 to 13 percent from 2013.

Table 9 – Upper Cape: Employment Projections and Supportable Development (2013-2022)

	Cape & Islands WIA Employment		Forecasted Δ		Upper Cape Capture [1]		Upper Cape Employment Δ		AVG SF per Emp	Building Space Needs	
Industry Sectors by Building Types	2013	2022	#	%	Low	High	Low	High		Low	High
Total	90,463	100,343	9,880	11%			3,220	3,523		825,041	912,304
Industrial/Flex	18,920	20,443	1,523	8%	28%	29%	346	394		98,806	116,817
Construction	6,346	7,538	1,192	19%	27%	31%	317	369	150	47,483	55,380
Manufacturing	2,194	1,928	(266)	-12%	37%	48%	(97)	(126)			
Wholesale Trade	1,775	1,800	25	1%	34%	43%	9	11	900	7,745	9,712
Transportation & Warehousing	2,257	2,387	130	6%	16%	20%	21	26	900	19,232	23,096
Information	1,747	2,005	258	15%	21%	26%	53	67	250	13,338	16,688
Admin. & Waste Services	4,601	4,785	184	4%	24%	26%	44	48	250	11,008	11,940
Office/Institutional	27,072	31,669	9,564	35%			1,637	1,791		495,719	543,543
Finance & Insurance	2,466	2,618	152	6%	22%	25%	34	38	200	6,793	7,629
Real Estate & Rental & Leasing	1,597	1,408	(189)	-12%	17%	22%	(32)	(41)			
Professional & Tech Services	4,408	5,573	1,165	26%	50%	55%	577	639	200	115,402	127,759
Educational Services	1,102	1,212	110	10%	57%	68%	63	75	400	25,200	30,112
Health Care & Social Assistance	17,499	20,858	3,359	19%	30%	32%	995	1,080	350	348,324	378,043
Commercial & Other	43,264	48,231	4,967	11%			1,236	1,338		230,516	251,945
Retail Trade	17,581	18,488	907	5%	25%	29%	231	260	200	46,223	51,972
Arts, Entertainment, & Recreation	3,256	4,073	817	25%	28%	32%	226	260	250	56,600	64,891
Accommodation & Food Services	18,309	21,102	2,793	15%	24%	25%	670	696	150	100,428	104,427
Other Services, Ex. Public Admin	4,118	4,568	450	11%	24%	27%	109	123	250	27,264	30,655

[1] Upper Cape's range in capture is based on the low/high represented of Cape & Islands WIA employment of 2001 to 2013 period

Source: MA EOL&WD, Urban Land Institute & RKG Associates, Inc.

These employment forecasts in turn yield potential building space needs to support these projection, and the results of the calculations are displayed in Table 9 An estimated 825,000 to 910,000 square feet (SF) of building area would be needed to support the employment forecast to 2022 collectively, in the Upper Cape region; however, some portion of this demand,

say perhaps 30 to 60 percent, may go to existing businesses with buildings in place, but 40 to 70 percent may be for new construction, depending on current availabilities.

About 100,000 to 120,000 SF would be for industrial-type buildings and mostly for the Construction and Transportation and Warehousing. Approximately 500,000 to 540,000 SF would be for office-type buildings and most allocated to the Health Care and Social Assistance and Professional and Technology Services sectors. Another 230,000 to 250,000 SF would be for commercial buildings, with the Accommodation and Food Services sector having the most demand.

7. Conclusion

In 2013, population in the Upper Cape region totaled over 85,900 persons which was almost the same as in 2010, and the number of households (35,670 units) was slightly lower than in 2010. Over the prior decade population and household growth in the Upper Cape region was much slower than the growth experienced during the 1990s. Housing production increased at the same rate during the 1990s and 2000s, but slowed significantly since 2010. However, seasonal housing in the Upper Cape region declined during the 1990s, as seasonal homes became year-round residences, but surged during the 2000s, as nearly 50 percent of the increase in housing during that period was effectively seasonal. Since 2010, more seasonal homes resulted than new housing.

Private-sector business formation trends were not positive, as the Upper Cape region had less operating businesses in 2013 than in 2007, and in some cases less than in 2001 in spite of strong growth between 2001 and 2007. The industry sectors that occupy industrial-type and commercial-type buildings had the highest losses in businesses, although those that use office-type buildings experienced gains, most notably in the Health Care and Educational Services.

Total employment in the Upper Cape Region increased from over 20,000 jobs in 1985 to over 32,500 jobs in 2013, as shown in Figure 8, reflecting a 62 percent increase. Similar to demographic trends, almost 80 percent of the growth occurred during the 1990s, while another 15 percent occurred prior to 2007. Employment in 2013 was about 2 percent higher than in 2007 (31,800) surpassing the pre-recession levels.

However, this recovery was only experienced in select sectors including Health Care, Administrative Services, and Accommodation and Food Services. Other sectors, such as Construction, Manufacturing, Wholesale Trade, Real Estate, and Finance and Insurance had employment levels in 2013 below those in 2001, in many case. Many of these industry sectors use industrial-type buildings, suggesting excess capacity exists in that part of the market.

The Upper Cape region ranked on-par in relation to the Cape and Islands WIA in terms of those businesses that occupy industrial buildings, and was strongest in the Manufacturing and Wholesale Trade sectors. Its weakness was evident in the Transportation and Warehouse sector. Other strengths in the Upper Cape communities were in the Professional and Technical Services and Educational Services sectors, which typically occupy office-type buildings.

Since 2001, business and employment trends in the Waste Disposal sector of Barnstable County followed economic cycle. Statistics in 2014 indicate a total of 15 private-sector firms provided 130 jobs and represented a very small portion of the county's economy. However, the average weekly wage ($1,030) was nearly 32 percent than the overall average wage.

Employment projections to 2022 for the Upper Cape region indicate an increase of 12 percent, and most of the gains are projected for those sectors that use office and commercial-type buildings, namely Professional and Health Care Services, and Accommodation and Food Services. The Construction industry is also projected to increase as well as some other sectors that use industrial-type buildings. These employment projections indicate 800,000 to 900,000 SF of supportable building area would be needed to support this demand; however, 30 to 60% may go to existing buildings/operations. Perhaps 100,000 SF of new industrial-building area would be needed to support those sectors over the next 8 to 10 years.

D. Market Conditions

This section identifies supply characteristics of industrial properties in the Upper Cape towns; however, the industrial sector is relatively small and limited to those areas in each town where the major business parks are location.

1. Industrial Tax Parcels and Average Assessment

The industrial tax base in each of the towns of the Upper Cape region vary between communities, as shown in Table 10, and represent a variety of different types as noted.[4] However, the number of industrial parcels in 2015 (Fiscal Year) ranged from nearly 50 parcels in Bourne to more than 150 in Sandwich, and represent from 0.4 to 1.4 percent of the taxable parcels in each community. Since 2000, Bourne and Falmouth experienced an increase of 14 to 35 industrial parcels, including condominiums, while Mashpee and Sandwich experienced a decline.

In 2015, the average assessed value of an industrial property (land and building) ranged from nearly $363,000 in Sandwich to $685,000 in Bourne. The industrial base represents less than 1 percent of the total assessment in each town, with the exception of Sandwich where the industrial base accounts for 1.5 percent of the total. The average assessed value of industrial parcels in 2015 was lower than in 2010, except in Falmouth. In Sandwich, the average assessment in 2015 was less than in 2005, and more than likely attributed to the power station and its depreciation.

In short, the industrial base in each of the communities is relatively small, and the average assessed value ranged from $360,000 to $685,000 per parcel (land and building) in 2015, and in most cases lower than in 2010, suggesting no post-recession recovery in this sector.

[4] Industrial real property parcels coded for assessment purposes include properties for manufacturing and processing; mining and quarrying; utilities; vacant industrial land, and electric generation plants. Industrial condominiums are also included.

Table 10 – Upper Cape: Trends in Industrial Parcel

Industrial Parcels				
Town	2000	2005	2010	2015
Bourne	35	43	46	49
Falmouth	90	109	121	125
Mashpee	137	63	65	66
Sandwich	157	155	154	152
Industrial as % of Total Parcels				
Town	2000	2005	2010	2015
Bourne	0.3%	0.4%	0.4%	0.4%
Falmouth	0.4%	0.5%	0.5%	0.5%
Mashpee	1.3%	0.6%	0.6%	0.6%
Sandwich	1.5%	1.5%	1.5%	1.4%
Average Industial Asmt				
Town	2000	2005	2010	2015
Bourne	$253,746	$626,098	$725,533	$684,933
Falmouth	$259,029	$615,311	$630,895	$635,142
Mashpee	$97,266	$331,027	$414,348	$389,752
Sandwich	$184,442	$400,483	$447,506	$362,904
Industrial as % Total Asmt				
Town	2000	2005	2010	2015
Bourne	0.6%	0.7%	0.7%	0.8%
Falmouth	0.6%	0.7%	0.7%	0.7%
Mashpee	0.9%	0.5%	0.6%	0.6%
Sandwich	1.6%	1.6%	1.7%	1.5%
Source: MA DLS; UC Towns & RKG Associates, Inc.				

2. Local Business Parks and Increased Development Thresholds

Each of the Upper Cape towns have one or more established business parks where most of the industrial development has occurred and excess land remains for future development, and include:

- Bourne - Jonathan Bourne Drive
- Falmouth - Edgerton Drive and Falmouth Technology Park
- Mashpee - Mashpee Executive Park
- Sandwich - Sandwich Industrial Park

The Cape Cod Commission approved an increase in the development thresholds of up to 40,000 SF, each, at these parks for research and development or light manufacturing uses. A prior approval of a 20,000 SF increase was given at the Mashpee Executive Park. In total, an allowance for an additional 180,000 SF of industrial-type buildings are in place to support future economic development, and each of these business parks have better locational attributes than the UCRTS, as well as the potential of users to cluster with other similar type business.

3. Available Industrial Sites and Buildings

Table 11 exhibits listing of 12 sites available for-sale containing nearly 30 acres in the Upper Cape region and their current asking price. Most of the parcels range in size between one and two acres, although three parcels are in the 4 to 7-acre range.

Table 11 – Upper Cape Region – Sample of Available Land Listings

Name	Address	Town	Lot Size	Rent $	For Sale $	Sale $/Acre
Land Lease/Sale	6 Katie Marie Drive	Bourne	1.4	$30,000	$299,000	$221,481
Land Lease/Sale	3 Katie Marie Drive	Bourne	0.9	$22,500	$299,000	$318,085
5-lot commercial sub	568 MacArthur Blvd	Bourne	6.0		$999,500	$166,583
AG Land	25 Crockers Rd	Falmouth	6.7		$725,000	$109,023
Mashpee Commons	9 Shellback Way	Mashpee	4.0		$1,200,000	$302,267
Ind-Land	53 Mercantile Way	Mashpee	1.8		$435,000	$248,571
Ret-Land	Route 130	Mashpee	1.2		$175,000	$141,129
Ind-Land	64 Industrial Drive	Mashpee	1.9		$499,000	$261,257
Ind-Lot 15	18 Merchantile Way	Mashpee	1.7		$450,000	$263,158
Ind-Lot 19	18 Merchantile Way	Mashpee	1.4		$329,900	$240,803
Ind-Lot 25	18 Merchantile Way	Mashpee	1.5		$329,900	$221,409
Ind-Land	Route 28	Mashpee	1.3		$390,000	$291,045
Total/AVG	N=12		29.7		$6,131,300	$206,302
Source: LoopNet & RKG Associates, Inc.						

The indicated average asking price per acre for this sample is $206,300, ranging from less than $110,000 to over $300,000 per acre. Asking rental prices equated to $22,000 to $24,000 per acre or 8 to 10 percent of the for-sale prices. Location, available utilizes, zoning, wetlands, topography and other conditions influence values.

Table 12 exhibits select characteristics of 25 buildings for-sale or lease in the Upper Cape region. This sample of industrial-type buildings totals approximately 217,100 SF and only 19 percent are occupied, and the remaining 176,100 SF are available, including 48,000 SF (28 percent) proposed to be built (TBD).

Table 12 – Upper Cape Region- Sample of Available Industrial Buildings

Name	Address	Town	Type	Lot Size	Total SF	Avail. SF	Rent $/SF	Sale $/SF	FAR
Business Bays - Unit 1	5 Katie Marie Drive	Bourne	Ind-Flex	1.7	10,000	2,000	$11.11	$150	14%
Business Bays - Unit 2	5 Katie Marie Drive	Bourne	Ind-Flex			1,000		$153	
Business Bays - Unit 3	5 Katie Marie Drive	Bourne	Ind-Flex			1,000		$153	
Business Bays - Unit 4	5 Katie Marie Drive	Bourne	Ind-Flex			2,000		$150	
Business Bays - Unit 5	5 Katie Marie Drive	Bourne	Ind-Flex			1,000		$153	
Business Bays - Unit 6	5 Katie Marie Drive	Bourne	Ind-Flex			1,000		$153	
Business Bays - Unit 7	5 Katie Marie Drive	Bourne	Ind-Flex			2,000		$150	
New WHS Prop (TBD)	2 Katie Marie Drive	Bourne	Ind-Flex	0.9	6,000	6,000	$13.00		15%
Industrial	4 Katie Marie Drive	Bourne	Ind-Mfg	1.1	6,000	6,000		$121	13%
Industrial Bldg	530 MacArthur Blvd	Bourne	Ind-Flex	0.9	8,040	8,040		$76	20%
Industrial & Office	118 Waterhouse Rd-Unit G	Bourne	Ind-Off		2,500	2,500	$14.16		
Industrial Bldg	25 Barlows Landing Rd	Bourne	Ind-Mfg	5.8	25,728	25,728		$50	10%
For Sale	628 Main St (RT 130)	Mashpee	Ind-Off	2.0	18,648	18,648		$51	21%
Ind-Condo	36 Nicoletta's Way	Mashpee	Ind-Condo	1.4	7,400	1,000	$18.00		12%
Ind-Condo	92 Industrial Drive	Mashpee	Ind-Condo			1,500	$10.80		
Ind Bldg	20 Langdon G Burwell Dr	Falmouth	Ind-Flex	4.3	3,144	3,144	$11.00	$270	2%
Falmouth Tech Park	35 Technology Park Dr	Falmouth	Ind-Flex		12,500	12,500	$10.00		
Falmouth Tech Park	82 Technology Park Dr	Falmouth	Ind-R&D	8.5	17,200	17,200	$15.50		5%
Downtown Falmouth	220 Main St	Falmouth	Off-Flex		5,112	1,825	$21.04		
Office/Flex	15 Carlson Land	Falmouth	Off-Flex	1.6	12,655	4,100	$17.00		18%
Office/Flex (TBD)	116 Bernard E St. Jean	Falmouth	Off-Flex		42,120	42,120	$12.00		
Ind Condo	376 Rt 130	Sandwich	Ind-Off	0.9	9,849	9,849		$79	24%
Unit 13	11 Jan Sebastian	Sandwich	Ind-Condo		28,000	2,000		$100	
Unit 14	11 Jan Sebastian	Sandwich	Ind-Condo			1,750		$103	
Units 1 & 2	15 Jan Sebastian Dr	Sandwich	Inc-Condo		2,218	2,218		$104	
Total/AVG			N=25		217,114	176,122	$12.88	$84	
Source: LoopNet & RKG Associates, Inc.									

Most of the available spaces (15 units) are targeted for smaller users with 1,000 to 3,000 SF units, while only four properties have 12,500 to 26,000 SF, and account for 35 percent of the available space.

For-rent pricing ranges from $10/SF to over $20/SF and average at nearly $13/SF for the sample. The industrial/flex buildings typically represented the lower end of the range, while the office/flex buildings or those with more commercial exposure represented the higher end of range. Fifteen of the industrial buildings are for sale, having an average asking price of nearly $85/SF, ranging $50/SF to $150/SF

4. Recent Land and Building Sales

RKG obtained sales data on 29 transfers of industrial properties in the Upper Cape region between June 2010 and March 2015, and one listing reportedly under contract. Key characteristics are exhibited in Table 13. The sales are segmented into five groups for discussion and comparison purposes.

Free-Standing Buildings: The first group consists of 6 transfers of free-standing industrial buildings that ranged in size from 6,000 SF to 29,000 SF, developed on a 1- to 5-acre parcel. The sale price per building size ranged from $34/SF to nearly $90/SF. Two sales of buildings with over 25,000 SF represented the low-end of the range ($34-$43/SF); while the others range from 6,000 SF to 11,400 SF, had values at the upper end ($82-$87/SF).

Industrial Condominiums: The next two groups consist of 14 sales of industrial condominiums including more recently built units in Mashpee, and then unit in Sandwich built in the mid-to-late 1980s. The five sales in Mashpee ranged in sale price from less than $100/SF to nearly $150/SF and averaged at $117/SF. The nine sales in Sandwich ranged from less than $60/SF to $115/SF and average at $83/SF or 29 percent less than in Mashpee. These condominium transfers represented half the total transfers over the last 4 to 5 years, and indicative of the demand for industrial space in the Upper Cape region.

Industrial Sales with Buildings of Limited Value: The next seven transfers are representative of industrial buildings that contributed marginally (if at all) at the time of sale to the overall sale price. In nearly all case, the buildings were demolished subsequent to the transfer, or repurposed for an alternative use. For this reason, a sale price per acre is indicated for these sales shown in Table 13. Three transfers had a lot size ranging from 1 to 3 acres, and the sale price per acre ranged from nearly $185,000 per acre for a closed cinema repurposed for a landscape business to over $670,000 per acre for a site where a commercial building was demolished for a new FW Webb Bath Center. The other sale was reflective a canal-side site of a former fishery demolished after the sale.

Two other sales were industrial buildings purchased by the Woods Hole Martha Vineyard Steamship Authority. One was purchased as a site to consolidate off-site parking areas, and the second for an industrial building repurposed as a service garage for its shuttle buses and employee parking. In essence these buildings did not contributed much to the total transfer values, and the sale prices equated to $215,000 to $230,000 per acre.

Another sale in this group was a multi-parcel transfer of Wiggin Pre-Cast in Bourne to Mean Pre-Cast of Braintree. It consisted of 18 acres in four parcels with a 9,400 SF warehouse and production facility that transferred for $1.77 million or about $98,400 per acre. As a result, Wiggins Means Pre-Cast could stock all its product lines on-site in Bourne for immediate delivery elsewhere on the Cape. The improvements contributed 10 to 15 percent of the total sale price, or effectively $19 to $28/SF for the building only ($177,000 to $265,500). The land value equated to about $90,000 per acre.

The final sale is this group is a multi-parcel sale of 34 acres from Boston Sand and Gravel to Drinkwater Investment Corp/PA Landers. The parcel is improved with a ready-mix plant/warehouse and service garage totaling 5,430 SF, and sold for $2 million or $58,600 per acre. The improvements contributed between 8 and 10 percent to the overall price, or effectively $29 to $37/SF for the improvements only ($160,000 to $200,000). The land value adjusted for the improvements equated to about $53,000 per acre.

Table 13 – Upper Cape Region: Industrial Building and Land Sales

Owner/Buyer	Address	Town	Sale Date	Sale Price	Acres	Bldg SF	FAR	Year Blt	$/SF (Acre)	Type
Kimbechi Realty	25 Barlows Landing	Bourne	Mar-15	$1,100,000	5.8	25,700	10%	1970	$43	Industrial
KNSC LLC	120 Bernard E St. Jean	Falmouth	Mar-14	$1,000,000	4.4	29,000	15%	2000	$34	Ind/WHS
Falmouth Housing Corp	25 Perry Ave	Bourne	Nov-14	$500,000	3.5	6,108	4%	1950	$82	WHS/SHOP
R Prevett	5 Katie Marie Drive +(6)	Bourne	Nov-12	$820,000	3.0	10,000	8%	2006	$82	Industrial
B & B Family Trust	374 Route 130	Sandwich	Dec-14	$500,000	0.9	5,736	14%	1986	$87	IND Whs
Atlantic Marble Realty	59 Technology Dr	Falmouth	Sep-14	$1,000,000	3.5	11,440	8%	1995	$87	Ind/MFG
K. & T Pratt	23 Bowdoin Rd #8	Mashpee	Apr-13	$129,900		1,344		2002	$97	Ind Condo
C. Shulman	23 Bowdoin Rd #5	Mashpee	May-14	$150,000		1,313		2002	$114	Ind Condo
LJW LLC	23 Bowdoin Rd	Mashpee	Jul-12	$250,000		2,145		2002	$117	Ind Condo
K. & T Pratt	23 Bowdoin Rd #10	Mashpee	Aug-14	$140,000		1,155		2002	$121	Ind Condo
J McMurray	23 Bowdoin Rd #3	Mashpee	Jul-12	$125,000		840		2002	$149	Ind Condo
Clambakes Etc	10 Jan Sebastian Drive #3	Sandwich	Jul-12	$200,000		3,466		1988	$58	Ind Condo
Scott Swaylik	15 Jan Sebastian Dr 2E & 3E	Sandwich	Jan-14	$142,000		2,232		1988	$64	Ind. Condo
Caralana	15 Jan Sebastian Dr 1D & 2D	Sandwich	Aug-13	$165,000		2,218		1988	$74	Ind. Condo
Collidge Street Partners	8 Jan Sebastian Dr #26	Sandwich	Oct-13	$100,000		1,250		1988	$80	Ind. Condo
K & W Ralthy	12 Jan Sabastian Dr #A	Sandwich	Dec-12	$286,700		3,230		1999	$89	Off Condo
CCG Trust	15 Jan Sebastian Dr #4	Sandwich	Feb-12	$100,000		1,087		1988	$92	Ind. Condo
3Ks Realty	8 Jan Sebastian Dr #16	Sandwich	Oct-13	$120,000		1,250		1988	$96	Ind. Condo
Calvery Church of CC	10 Jan Sebastian Drive #1	Sandwich	Feb-13	$376,000		3,728		1986	$101	Ind Condo
R Sullivan	11 Jan Sebastian Dr #5	Sandwich	Dec-13	$135,000		1,176		1986	$115	Ind. Condo
The Wind School	20 Freezer Rd	Sandwich	Jun-10	$500,000	1.2	19,654	38%	1915	$420,168	Frm Fishery Demo'd
FW Webb/JDP Assoc	171 Worcester Court	Falmouth	Mar-13	$920,000	1.4	17,316	29%	2013	$674,487	Land for New Store
Generation AJW	742 Nathan S Ellis Hwy	Falmouth	Jun-13	$545,000	2.9	9,855	8%	1972	$184,934	Cinema to C. Yard
WHMVNSSA	50 Bernard E St Jean	Falmouth	Dec-12	$925,000	4.3	5,000	3%	2000	$215,317	For Service Garage
WHMVNSSA	590 Thomas Landers Blvd	Falmouth	Sep-14	$4,268,989	18.6	16,720	2%	1988	$229,676	Parking Lot
79 Barlows Landing LLC	79 Barlows Landing (+0,61,69)	Bourne	Dec-12	$1,765,000	17.9	9,420	1%	1998	$98,384	Ind + Excess Land
Drinkwater Investment	608 & 638 Main Street	Mashpee	Dec-14	$2,000,000	34.1	5,428	0%	1978	$58,617	Cement Plt/Garage
Falmouth Youth Hockey	9 Technology Park Dr	Falmouth	Sep-11	$1,589,100	9.9			2012	$160,954	Land for New Rink
Teledyne Benthos	0 Edgerton Drive	Falmouth	Apr-11	$995,000	8.0	30,250	9%	2014	$124,531	Land for R & D Add.
Cape Cod Co-op Bank	588 Main Street	Mashpee	Listing	$2,200,000	48.0			N/A	$45,833	Comm Land

Source: The Warren Group; LoopNet; Local Assessors' Files; RE Brokers; and RKG Associates, Inc.

Vacant Land Sales: The last group includes two industrial land sales in Falmouth, and a listing in Mashpee. The first was a 9.9-acre site adjacent to the Technology Park which the Steamship Authority sold to Falmouth Youth Hockey for the construction of a new hockey rink at a sale price of about $160,000 per acre. The second was an 8-acre site off Edgerton Drive that Teledyne purchased to expand its campus by another 30,000 SF. The sale price equated to $124,500 per acre. A listing of a 48-acre site off Main Street in Mashpee is also shown, which reportedly is under-contract at less than its asking price ($2.2 million) or perhaps $45,000 per acre.

5. Conclusion

The industrial base in each of the communities is relatively small, and the average assessed value in 2015 ranged from $360,000 to $685,000 per parcel (land and building). In most cases, these average values were lower than in 2010, suggesting no recovery in this sector.

The Cape Cod Commission approved an increase of up to 180,000 SF in development potential of industrial-type buildings at the established industrial/business parks in the Upper Cape region. In addition, these business parks have better locational attributes than the UCRTS site, as well as the potential of users to cluster with other similar type business. In comparison, the UCRTS site is relatively remote and somewhat isolated, despite its centralized location in the UCRTS communities. The UCRTS site has rail access which is lacking at the business parks.

The industrial market is primarily limited to small users seeking building/unit sizes of 1,000 to 3,000 SF as indicated by the available for-rent/sale supply as well as by the demand indicated from building sales. More recently a speculative new development of a multi-unit building occurred suggesting improving conditions. Buildings larger than 5,000 SF are more difficult to lease/sell and in some cases owners consider subdividing them into smaller increments. Demand for larger building (5,000 SF or larger) is targeted more toward end-users provided the right fit can be made. In some case, transfers of larger industrial buildings result as a shift in the ownership of a business already occupying the building, such that the pricing may not be reflective of "market" value.

The available supply of industrial/ commercial lots also appears targeted to small users as most of the for-sale lots are 2 acres or less in size. The number of lots sales over the last few years has also been minimal, despite a readily available supply.

The asking rental price for industrial buildings generally ranges from $10 to $15/SF, and the average was almost $13/SF. For-sale pricing generally ranges from $50 to $150/SF and averaged at almost $85/SF. Comparing this for-sale range to the for-rent range indicates asking rents are about 12 to 20 percent of for-sale prices, and average at 15 percent.

Comparing the amount of available industrial space (176,100 SF) on the market with the potential need (100,000 SF) from the ten-year forecast of industrial-building employment suggest an ample supply is (or will be) available to meet this forecasted demand. In other words, the current supply of available industrial buildings accounts for about 80 percent more than the forecasted building needs.

Sale prices of industrial buildings ranged from $30 to $40/SF for larger buildings (20,000 SF or larger) while prices of mid-sized buildings (5,000 to 11,000 SF) are in the $80 to $90/SF range. Industrial condominiums built in the mid-to-late 1980s had an average selling price of $83/SF, while those building built in the early 2000s had an average price to $117/SF; the former were in Sandwich and the latter in Mashpee.

Almost half the industrial building transfers over the last five years, had building that contributed marginally to the overall sales value, as they were subsequently demolished or repurposed after the sale. Three had lot sizes of five acres or more and two were purchased by

the Steamship Authority to alleviate some of its parking needs. Only two transfer had a building reused for its same purpose, however, the improvement only accounted for between 8 to 15 percent of the sales value, as the remaining value was associated with the excess land needed to display inventory or stock. Effectively, the adjusted improvement value ranged from $30 to $40/SF of building area, and the adjusted land value ranged from $53,000 to $90,000 per acre.

Sales of vacant industrial land in Falmouth ranged from $125,000 to $160,000 per acre, although the Steamship Authority paid up to $230,000 per acre. The asking price for small lots (less than 2 acres) ranged from $220,000 to $300,000 per acre, while larger parcels (4 to 6 acres) had asking prices of $100,000 to $170,000 per acre, although over $300,000 per acre with commercial viability. Sales of larger tracts including some with improvements ranged from $45,000 to $90,000 per acre. Environmental constraints such as topography, soils and wetlands influence values.

E. Reuse Options for UCRTS

The industrial market in the Upper Cape region has been improving slowly since the end of the recession. Employment levels in key sectors that use industrial buildings in 2013 remain in many cases below levels in 2001. It is difficult to judge a specific reuse option since it would be targeted to a potential end-user, whose actions are difficult to quantify. More than likely it would be an off-Cape business seeking an on-Cape location to increase market share and store additional product closer to customers on the Cape. Certain marketability issues also affect the reuse of the site and improvements, including:

- Ownership of the leasehold interest; namely what is the status and timing of the Air Force excessing the property?
- The UCRTS according to the consent agreement must be removed when vacated, and the premises restored to what condition? And who makes that determination? And is that condition passed onto the next user? Will UCRTS relinquish site control?
- The lack of a long-term leasehold interest would affect any private-sector financing to make improvements. And would that be through Mass Development and/or UCRTS?
- Would the municipal or state entities involved assist in fast-tracking any permit requirements for a desired user?
- Who would make a final determination of any potential bid process in selecting a desired use(r)? Mass Development? UCRTS?

1. Mass Coastal Railroad

The owner of MCR proposed with the UCRTS Board of Managers as well as Mass Development a potential bulk storage center for commodity-type materials, such as lumber, cement products, road salt and the like. In this manner, these items could be shipped via rail to the site, off-loaded and stored until pick-up or delivery to a local businesses/users.

A fee could be charged on a per car basis or perhaps on the amount of product delivered, stored and transferred. Although a potential fee or amounts delivered were not identified. It is unlikely the existing building would be used under this option, since it is not designed for off-

loading cargo from rail. It may be used for short-term storage but it is not large enough to store much inventory.

RKG is not convinced that there is a need for an inter-transit storage siding, and questions its feasible given the "short year" on the Cape, and if users are willing to pay additional transit and handling charges, first at the arrival and then for pick-up or delivery. In addition, the "just in time" delivery method preferred by most small businesses today may not be realized or any cost savings, since small businesses prefer this method to avoid warehousing and expending capital for idle inventory/supplies.

Additional information such as the amount and types of items delivered as well as the number of committed end-users that would utilize this method would be need. This option does not appear to meet the purpose of the Government zoning, since the bulk storage/ warehouse would benefit select commercial users and not the public at large. From a valuation perspective, the improvements would have little value except for the areas of pavement, and its value would only be a cost avoidance to the potential user.

2. Cavossa Disposal Corporation

Carl Cavossa operates an excavation and commercial trash business in East Falmouth and recently obtained a zoning change to development a transfer station at his 8.5 acre site that reportedly would cost between $800,000 and $1 million. Mr. Cavossa has repeatedly approached the UCRTS Board of Managers about using the facility as a transfer station for his commercial trash business as well as expanding operations to include recycling and construction and demolition. Apparently, the Board was unwilling to consider his proposal in the past due to the constraints of a prior contract with Mass Coastal that has since expired.

This option may provide the best reuse for UCRTS since the existing building would likely be utilized as a transfer station (although with upgrades), and the excess acreage would allow for additional operations and storage. The use of rail may also be an option for Mr. Cavossa provided it is cost competitive with truck transportation. A "host" fee could be charged similar to what the Town of Yarmouth is receiving from its regional transfer station.[5] It is not clear under this option if the existing permit as a transfer station could be transferred or if a new permit(s) would be needed given the additional operations.

3. Photovoltaic Solar Array

One sector that is "hot" in the Upper Cape region is the installation of solar arrays not only at residential homes, but also at businesses, local schools, municipal buildings and a former landfill. As shown in Table 14, fifty non-residential project over the last five years have been completed and generating over 9.0 megawatts (mW) sufficient to power about 1,500 homes or almost three percent of the housing units in the Upper Cape region. Some of the major projects include Green Meadows in Sandwich (4.0 mW); Mashpee Landfill (1.8 mW); Falmouth Youth Hockey League (0.8 mW); Mashpee High School (0.3 mW); Onset Computer in Bourne (0.2 mW).

[5] The Town of Yarmouth signed a 10-year agreement with Covanta/SEMASS for waste management services and the operation of the Yarmouth Transfer Station, and with transportation provided by Mass Coastal Rail. The town will get a $3/ton "host" fee for MSW and recyclable material; and an annual $25,000 payment for capital projects at the transfer station.

Table 14 – Upper Cape: Non-Residential Solar Projects

TOTAL	Projects	Capacity (kW)	Installation Cost	$/kW
2010	5	393	$2,532,560	$6,440
2011	9	279	$1,710,896	$6,129
2012	17	1,439	$6,078,548	$4,223
2013	5	147	$397,486	$2,698
2014	13	6,657	$16,866,495	$2,534
2015	1	108	$284,928	$2,650
Total	50	9,024	$27,870,913	$3,089

Source: MA Executive of Energy & Environmental Affairs & RKG Associates, Inc

This option however may not be a near term opportunity since NStar, the local electric provider, has reached it authorized statewide "net-metering" limit for solar power. Additional hook-ups are not permitted at this time without special legislation, which is in the works. This option would not have any need for the existing building (other than storage); but could take advantage of the paved areas. The rail line would not be utilized; but a host fee could be assessed, and the Town of Sandwich would benefit from an increase in personal property assessment associated with the equipment.

4. Transportation, Storage and/or Waste Related Entities

RKG had a discussion with a Kevin Pepe, a local commercial broker (Commercial Realty Advisors) who indicated that perhaps 6 to 10 business entities would be interested in reusing the UCRTS site for trucking/hauling; bulk storage and/or waste transfer by an end-user. The broker, however, would be seeking a commission if he attracted a potential user to the site.

5. Commuter Rail Station, Multi-Modal Facility and Parking

Although the site is relatively isolated, it is centrally located within the Upper Cape region. A reuse possibility that may benefit the Commonwealth is to consider extending commuter rail to the site, linking local bus lines and developing a parking lot to shuttle people. This option could use a portion of the paved areas, although not the building. This would be more of a long-term option, and considered in conjunction with reuse of other nearby portions of JBCC.

F. Valuation Assessment

If the 18.9-acre site was vacant today, it would likely remain as vacant land given the imbalance in the industrial market caused by the excess land and building supply versus limited demand for large lots and buildings, with the exception of an unknown end user. The zoning designation also restricts reuse to bulk storage/warehousing; contractor yards and municipal uses, although special permits can be obtained for photovoltaic solar arrays and transfer station. The land, however, has to remain in public ownership, which may create a market and financial challenge for a future private user, due to the lack of a transferable fee interest.

As vacant industrial land, the site would likely have a value at the low end of the range due to its relatively isolated location and its zoning that prohibits any high value industrial or office use. A range of between $50,000 and $70,000 per acre would seem realistic, in comparison to

the higher land value at business parks elsewhere with better locational and market advantages. The high end of the range would be associated with any premium for the rail-head, given the reported shortage of sites in the Upper Cape with rail accessibility. For the 18.9 acre site, the value for the "fee interest" in the vacant land would range from $950,000 to $1.3 million.

With regards to the improvements in place, namely a 7,600 SF high-bay, steel building and 160,000 SF of laydown area in relatively fair condition, RKG believes that the value would be limited to the eventual reuse option. The improvement value at a few sales indicated a range from $30 to $40/SF of building suggesting a value of perhaps $230,000 to $300,000. The depreciated book-value of the initial investment is perhaps $290,000, or toward the high end of the range.

Reuse of the improvements if practical by a future end-use would simply be for cost-avoidance, given their substandard conditions and need for modernization and upgrades. Realistically, the improvements have a negative value since they are to be removed once vacated and the site returned to prior conditions, and that cost would likely be more than any value/income attributed to the improvements.

APPENDIX G

Matrix of Potential Uses

Upper Cape Regional Transfer Station
Matrix and Ranking of Potential Uses, Anticipated Current Demand

Potential Use	Description	Anticipated Facility Upgrades	Market Demand	Weight:	10	5	2	2	2	Total Score	Additional Comments
					Anticipated Market Demand	Capital Improvements	Compatible with Base Use	Compatible with Possible Future Surrounding Development	Compatible with Current Permits and Consent to Lease		
Solid Waste Transfer Station	Facility to operate in similar manner as current operation, accepting and shipping MSW. Operations may change from rail transfer to truck transfer depending on user.	Low	Low	UCRTS Towns or 3rd Party (PPP)	1	5	5	5	5	**65**	
C&D Transfer Station	Facility to accept C&D material for transfer to process facility. Operations may change from rail transfer to truck transfer depending on user.	Low	Moderate	UCRTS Towns or 3rd Party (PPP)	4	5	5	5	3	**91**	May not be well received by DEP without some processing of materials.
Single Stream Recycling Transfer Facility	Facility to receive and transfer single stream recycling. Operations may change from rail transfer to truck transfer depending on user.	Low	Moderate to Low	UCRTS Towns or 3rd Party (PPP)	2	5	4	5	3	**69**	
Compost Facility, Outdoor	Facility to accept and process organic waste by composting.	Low	Moderate to Low	UCRTS Towns or 3rd Party (PPP)	4	3	4	2	2	**71**	
Salt Storage, Potential for Compatible Use	Facility to accept and store salt to meet demands for Cape Cod (municipal and private).	Low	Moderate	UCRTS Towns or 3rd Party (PPP)	4	3	4	4	1	**73**	Facility upgrades based on tarp cover of stockpile and small storage building for loading.
Rail Head	Facility to be used as a railroad depot at which supplies (lumber, cement products, etc.) are unloaded to be distributed or forwarded by truck or other means.	Moderate	Moderate	3rd Party (PPP)	4	3	2	3	2	**69**	Anticipated review by ANG of materials to be received and stored.
WWTP/Septic Sludge, Food Waste, Organics Transfer Facility	Facility to accept and transfer WWTP and/or septic sludge.	Moderate	Moderate to Low	UCRTS Towns or 3rd Party (PPP)	3	3	3	2	2	**59**	Demand is expected to increase in future with more treatment plants going online.
C&D Processing Facility	Facility would accept C&D materials and process materials for reuse and disposal.	High	Low	3rd Party (PPP)	3	1	4	4	2	**55**	
Single Stream Recycling MRF	Facility to receive and process single stream recycling. Facility upgrades and processing equipment required. Baled recyclables can be loaded into intermodal containers and shipped via rail or truck.	High	Low	3rd Party (PPP)	2	1	4	4	2	**45**	
Composting, WWTP/Septic Sludge, Food Waste, Organics	Facility to accept and process materials for composting.	High	Moderate to Low	UCRTS Towns or 3rd Party (PPP)	3	3	3	2	2	**59**	Demand is expected to increase in future with more treatment plants going online.
Anaerobic Digestion Facility	Facility to accept and process organic wastes including food waste and WWTP/septic sludge.	High	Moderate to Low	3rd Party (PPP)	2	1	3	2	2	**39**	
Food Waste Preparation Facility	Facility to accept food waste for slurrying and/or de-packaging plant. Prepared food waste would then be transferred to a anaerobic digestion facility or composting type facility.	High	Moderate to Low	3rd Party (PPP)	3	1	3	2	2	**49**	Demand is expected to increase in future with more AD facilities going online.
Renewable Energy Facility, Potential for Compatible Use	Solar (photovoltaics) would be likely source of renewable energy.	High	High	3rd Party (PPP)	5	1	5	5	2	**79**	

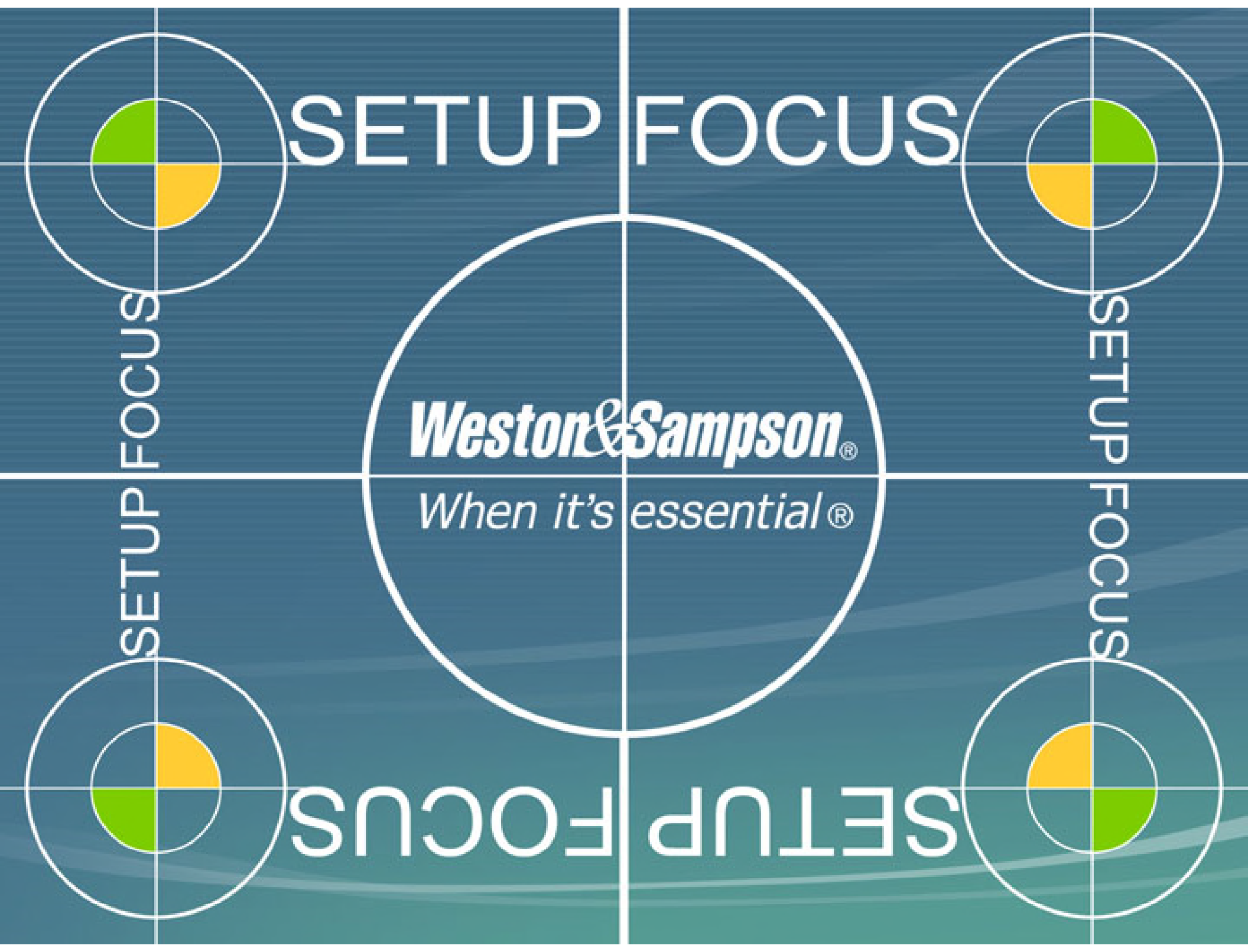
Upper Cape Regional Transfer Station

Matrix and Ranking of Potential Uses, Anticipated Future Demand

Potential Use	Description	Anticipated Facility Upgrades	Future Market Demand	Anticipated Potential User	Anticipated Market Demand	Capital Improvements	Compatible with Base Use	Compatible with Possible Future Surrounding Development	Compatible with Current Permits and Consent to Lease	Total Score	Additional Comments
Weight:					**10**	**5**	**2**	**2**	**2**		
Solid Waste Transfer Station	Facility to operate in similar manner as current operation, accepting and shipping MSW. Operations may change from rail transfer to truck transfer depending on user.	Low	Low	UCRTS Towns or 3rd Party (PPP)	3	5	5	5	5	**85**	Depending on capacity for region, Anticipated Market Demand could be higher when contracts are done.
C&D Transfer Station	Facility to accept C&D material for transfer to process facility. Operations may change from rail transfer to truck transfer depending on user.	Low	Moderate	UCRTS Towns or 3rd Party (PPP)	4	5	5	5	3	**91**	May not be well received by DEP without some processing of materials.
Single Stream Recycling Transfer Facility	Facility to receive and transfer single stream recycling. Operations may change from rail transfer to truck transfer depending on user.	Low	Moderate to Low	UCRTS Towns or 3rd Party (PPP)	2	5	4	5	3	**69**	
Compost Facility, Outdoor	Facility to accept and process organic waste by composting.	Low	Moderate	UCRTS Towns or 3rd Party (PPP)	4	3	4	2	2	**71**	
Salt Storage, Potential for Compatible Use	Facility to accept and store salt to meet demands for Cape Cod (municipal and private).	Low	Moderate	UCRTS Towns or 3rd Party (PPP)	4	3	4	4	1	**73**	Facility upgrades based on tarp cover of stockpile and small storage building for loading.
Rail Head	Facility to be used as a railroad depot at which supplies (lumber, cement products, etc.) are unloaded to be distributed or forwarded by truck or other means.	Moderate	Moderate	3rd Party (PPP)	4	3	2	3	2	**69**	Anticipated review by ANG of materials to be received and stored.
WWTP/Septic Sludge, Food Waste, Organics Transfer Facility	Facility to accept and transfer WWTP and/or septic sludge.	Moderate	Moderate	UCRTS Towns or 3rd Party (PPP)	4	3	3	2	2	**69**	Demand is expected to increase in future with more treatment plants going online.
C&D Processing Facility	Facility would accept C&D materials and process materials for reuse and disposal.	High	Low	3rd Party (PPP)	3	1	4	4	2	**55**	
Single Stream Recycling MRF	Facility to receive and process single stream recycling. Facility upgrades and processing equipment required. Baled recyclables can be loaded into intermodal containers and shipped via rail or truck.	High	Low	3rd Party (PPP)	2	1	4	4	2	**45**	
Composting, WWTP/Septic Sludge, Food Waste, Organics	Facility to accept and process materials for composting.	High	Moderate	UCRTS Towns or 3rd Party (PPP)	4	3	3	2	2	**69**	Demand is expected to increase in future with more treatment plants going online.
Anaerobic Digestion Facility	Facility to accept and process organic wastes including food waste and WWTP/septic sludge.	High	Moderate to Low	3rd Party (PPP)	2	1	3	2	2	**39**	
Food Waste Preparation Facility	Facility to accept food waste for slurrying and/or de-packaging plant. Prepared food waste would then be transferred to a anaerobic digestion facility or composting type facility.	High	Moderate	3rd Party (PPP)	4	1	3	2	2	**59**	Demand is expected to increase in future with more AD facilities going online.
Renewable Energy Facility, Potential for Compatible Use	Solar (photovoltaics) would be likely source of renewable energy.	High	High	3rd Party (PPP)	5	1	5	5	2	**79**	

APPENDIX H

Feasibility Reuse Study, Project Update Presentation, October 7, 2015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Upper Cape Regional Transfer Station

Feasibility Reuse Study

Project Update

Board of Managers Meeting

October 7, 2015

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Update Outline

- Summary of Previous Work
  - Existing Permits & Leases and Limitations
  - Site Conditions
- Market Demand
- Matrix of Uses
- Conclusions and Next Steps

Summary of Previous Work

- Existing Permits & Leases and Limitations
  - IMA (2015) – *Agreement among the Towns of the UCRTS for the maintenance and operation of a regional municipal services facility.*
    - Draft document had expiration date of June 30, 2018.
    - Allows participating members to withdraw.

Summary of Previous Work

- Existing Permits & Leases and Limitations
  - Consent No. 07-10 (2007) – *Allows Towns of the UCRTS to construct, use, maintain, control, operate and repair a waste and refuse transfer station.*
    - Operation of the facility shall not conflict with the rights of the Government nor interfere with the operations by the Government.
    - This consent may be terminated for nonuse for a period of two years.
    - There is no agreement between the UCRTS and the Commonwealth for use of the land.

Summary of Previous Work

- Existing Permits & Leases and Limitations
  - MassCoastal Contract – *Agreement between MassCoastal and UCRTS for rail haul to SEMASS.*
    - MassCoastal assumes all track and ROS maintenance on Otis Rail Spur between North Falmouth switch and the UCRTS end of track bumping post.
    - Expired upon the expiration of the UCRTS contracts with SEMASS.

Summary of Previous Work

- Existing Permits & Leases and Limitations
  - Site Assignment (1988) – *Designates the land as suitable for the use of solid waste operations.*
    - Granted by the Town of Sandwich Board of Health.
    - DEP has stated that they will look into the viability of the existing Site Assignment under normal permitting of a different operation.
  - ATO (1989, 1994) – *Permits the operations of a Municipal Solid Waste transfer station.*
    - Approved for Municipal Solid Waste operations.
    - Permit by Rule approval in 1994.

Summary of Previous Work

- Site Conditions
  - Building – Suitable for continued solid waste operations. Change in use or occupancy may trigger code upgrades.
  - Front End Loader – 2002 Volvo L120; ~ $25,000
  - Scale – Long past useful life; $0.
  - Generator – Original; $0
  - Rail – Line between UCRTS and North Falmouth Switch (~3 miles) requires maintenance.




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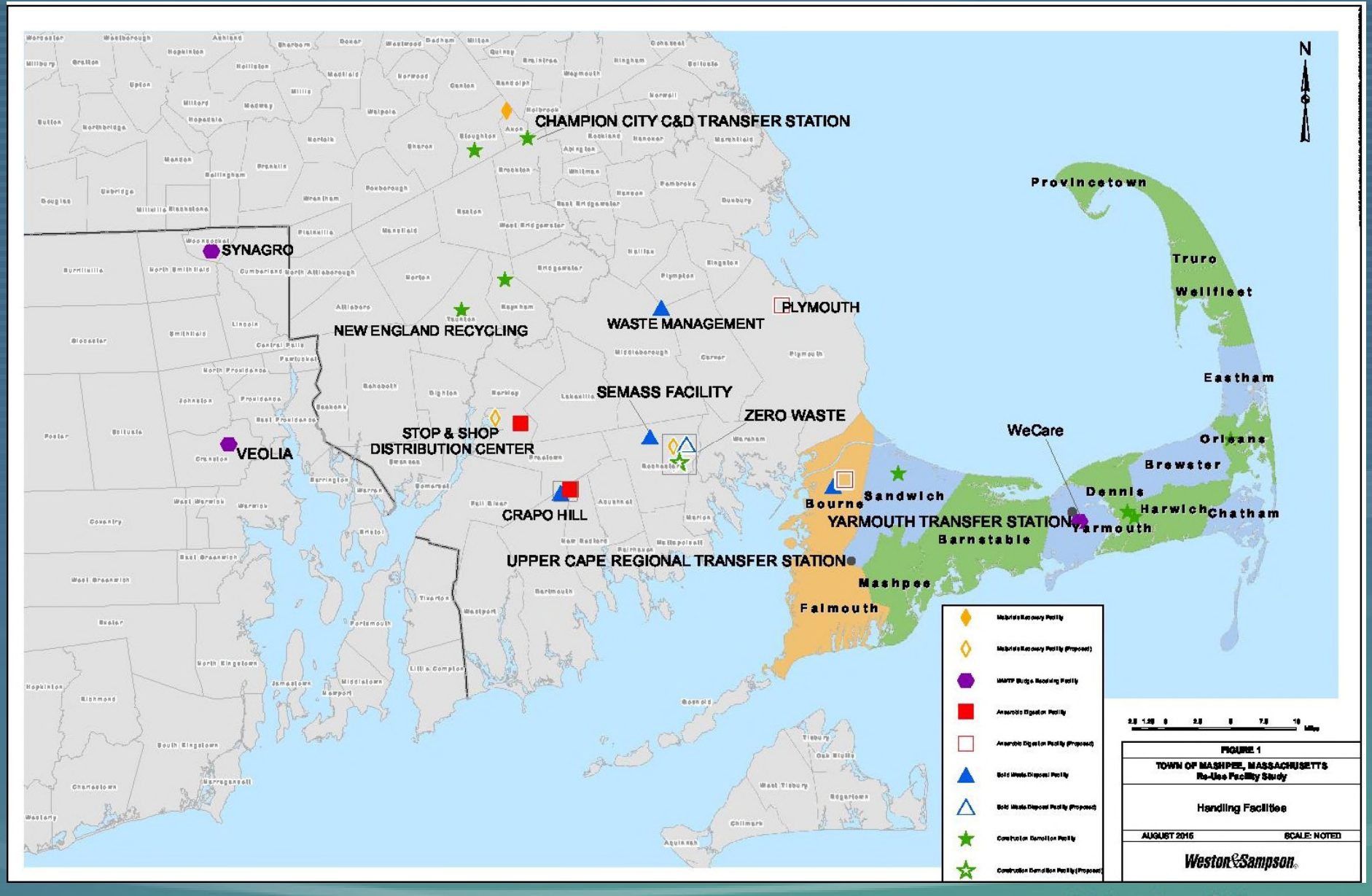
Summary of Previous Work

- Other Findings
  - Security - ANG has stated that they will look for compatible uses. This appears to be consistent with Consent No. 07-10.
  - Uncertainty of future ownership status with ANG looking to divest themselves of property.
  - Army National Guard has filed a request for land that the ANG is looking to divest (UCRTS).
  - Leased area needs to be cleared from previous coal yard use (anticipated end of year).
  - Leased area is partially located in former grenade courts. Survey anticipated this fall.

Summary of Previous Work

- Take Aways:
  - Uncertainty of future ownership status may create an unfavorable situation for investors.
  - Significant changes in use or changes in occupancy may trigger building upgrades (code compliance).
  - ANG has input on changes to final use.
  - Permit change may cause DEP to review validity of Site Assignment.
  - Other minor items.
    - Nonuse for 2 years.
    - Withdrawal of member towns.
    - Army NG has requested land.
    - Coal Yard and Grenade Range

Market Demand



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Market Demand

- Takeaways:

MSW Little to no interest from either public or private sector. Municipal contracts are tied up for 10 years.

Recycling Little interest expressed for recycling operation on municipal side. No interest from private sector.

Organics Some interest expressed for organics use. Level of complexity (i.e. sludge), increases capital cost and increases terms of lease agreement. Interest may increase in future

C&D Multiple expressions of interest.

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Matrix of Uses

- Identified Potential Uses
- Resources
  - Member Towns
  - ANG
  - Cape Cod Commission
  - MassDevelopment
  - Private Industry
  - Outside Consultant (RKG Associates)

Matrix of Uses

- Identified Potential Uses:
  1. Solid Waste Transfer Station
  2. C&D Transfer Station
  3. Single Stream Recycling Transfer Facility
  4. Compost Facility, Outdoor
  5. Salt Storage
  6. Rail Head
  7. WWTP/Septic Sludge, Food Waste, Organics Transfer Facility
  8. C&D Processing Facility
  9. Single Stream Recycling MRF
  10. Composting, WWTP/Septic Sludge, Food Waste, Organics
  11. Anaerobic Digestion Facility
  12. Food Waste Preparation Facility
  13. Renewable Energy Facility

Matrix of Uses

- Identified Criteria
  - Anticipated Market Demand
  - Capital Improvements
  - Compatible with Base Use
  - Compatible with Possible Future Surrounding Development
  - Compatible with Current Permits and Consent to Lease

Matrix of Uses

- Identified Criteria
- Weighted Criteria (by order of Importance)
  - Anticipated Market Demand; 10
  - Capital Improvements; 5
  - Compatible with Base Use; 2
  - Compatible with Possible Future Surrounding Development; 2
  - Compatible with Current Permits and Consent to Lease; 2

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Matrix of Uses

- Methods

Score is multiplied by the Weight (i.e. 1 x 10 = 10)

Potential Use	Description	Anticipated Facility Upgrades	Market Demand	Weight:	10	5	2	2	2	Total Score
					Anticipated Market Demand	Capital Improvements	Compatible with Basic Use	Compatible with Possible Future Surrounding Development	Compatible with Current Permits and Consent to Lease	
Solid Waste Transfer Station	Facility to operate in similar manner as current operation, accepting and shipping MSW. Operations may change from rail transfer to truck transfer depending on user.	Low	Low	UCRTS Towns or 3rd Party (PPP)	1	5	5	5	5	65
C&D Transfer Station	Facility to accept C&D material for transfer to process facility. Operations may change from rail transfer to truck transfer depending on user.	Low	Moderate	UCRTS Towns or 3rd Party (PPP)	4	5	5	5	3	91

Sum of (Score x Weight of Each) = Total Score

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Matrix of Uses

- Results

Upper Cape Regional Transfer Station

Summary of Matrix and Ranking of Potential Uses, Anticipated Current Demand

Rank	Description	Total Score
1	C&D Transfer Station	91
2	Renewable Energy Facility, Potential for Compatible Use	79
3	Salt Storage, Potential for Compatible Use	73
4	Compost Facility, Outdoor	71
5	Single Stream Recycling Transfer Facility	69
6	Rail Head	69
7	Solid Waste Transfer Station	65
8	WWTP/Septic Sludge, Food Waste, Organics Transfer Facility	59
9	Composting, WWTP/Septic Sludge, Food Waste, Organics	59
10	C&D Processing Facility	55
11	Food Waste Preparation Facility	49
12	Single Stream Recycling MRF	45
13	Anaerobic Digestion Facility	39

Upper Cape Regional Transfer Station

Summary of Matrix and Ranking of Potential Uses, Anticipated Future Demand

Rank	Description	Total Score
1	C&D Transfer Station	91
2	Solid Waste Transfer Station	85
3	Renewable Energy Facility, Potential for Compatible Use	79
4	Salt Storage, Potential for Compatible Use	73
5	Compost Facility, Outdoor	71
6	Single Stream Recycling Transfer Facility	69
7	Rail Head	69
8	WWTP/Septic Sludge, Food Waste, Organics Transfer Facility	69
9	Composting, WWTP/Septic Sludge, Food Waste, Organics	69
10	Food Waste Preparation Facility	59
11	C&D Processing Facility	55
12	Single Stream Recycling MRF	45
13	Anaerobic Digestion Facility	39

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Matrix of Uses

- Ranked (scored) Uses; 1 through 5

Score	Anticipated Market Demand	Capital Improvements	Compatibility with Base Use	Compatibility with Possible Future Surrounding Development	Compatibility with Current Permits and Consent to Lease
5	Private Interest, multiple	No capital improvements to minimal	Consistent with current use and lease	Consistent with current noise, traffic and odors	No changes expected beyond operator
4	Private interest, single	Moderate Improvements to facility building	Consistent with current use or lease.	Not consistent with current noise traffic and odors, but no impact to surrounding property.	Compatible with current permits, not compatible with lease
3	No expressed interest, but appears to be need	Moderate Improvements to facility and site	Potential for safety or security concerns with base.	Minimal opportunity for additional noise, traffic, and/or odors to surrounding property	Compatible with current permits, not compatible with lease
2	Expressed interest, but no need.	Significant improvements to the building	Not consistent with current use or lease	Moderate likelihood of traffic, odors, and or noise disruption to surrounding area	Not compatible with permits.
1	No expressed interest, and no apparent need	Significant improvements to site and structure, leaving site not useable for TS in future.	Not consistent with current use and lease	High likelihood of traffic, odors, and or noise disruption to surrounding area	Not consistent with current permits and agreements.

Conclusions and Next Steps

- The site appears to have long-term value to Towns as a transfer facility and should be maintained.
- C&D transfer appears currently to be the best public or private use based on our review.
  - There appears to be a smaller, viable market for composting of organic waste, septic, and sewer sludge.
- Based on existing arrangements, Bourne ISWM appears to be best fit to champion effort for C&D facility.
  - If Bourne cannot champion effort, an RFP approach should be used to identify private industry potential lessee of the facility.

Discussion

- .

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- *permitting*
- *design*
- *construction*
- *operation*
- *maintenance*
- *forensic engineering*

Thank You

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