University of Maine
Civil and Environmental Engineering

Belfast Municipal Airport Public Terminal and Related Amenities

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Executive Summary

The Belfast Municipal Airport currently utilizes a small, outdated building for managing the airport and training pilots. This building does not meet ADA accessibility requirements. There is a parking lot on site that doesn't have any handicapped parking. The road that accesses the airport, Wright Brothers Drive, is crossed under by a culvert that regularly overtops. Due to these issues, Cory Morse, a representative of the airport, has come to us in search of solutions. During a site visit in October 2023, we recognized a safety hazard in the hairpin turn design of the entrance to Wright Brothers Drive and decided to investigate potential solutions.

We propose the construction of a new terminal building that will house amenities for the airport manager, pilot training sessions, and travelers waiting for flights. The new building design features ADA accessible spaces and amenities. The proposed new terminal building is located at the terminal end of Wright Brothers Drive. We also propose two ADA parking spaces adjacent to the new terminal building to accommodate handicapped individuals. We propose two parallel parking bays along the northern side of Wright Brothers Drive. These two parallel parking bays have 6 parking stalls each to accommodate an expected increase in airport use. Lastly, we propose a new culvert under the entrance to Wright Brothers drive to prevent overtopping during significant precipitation events. We do not propose altering the design of the entrance to Wright Brothers Drive. Details of our proposed designs can be found herein.

Project Overview

This project is located at the municipal airport in the City of Belfast, Maine. The airport currently consists of a small, 32 feet by 16.5 feet (~530 SF), terminal building, several hangars of varying size, and exterior parking for aircraft. The recent addition of fuel tanks at the airport has led to an increase in air traffic. The current terminal building is only open to pilots flying in and out of the airport; however, this additional traffic has caused the town to consider opening a public terminal that would serve both pilots and passengers alike.

This conversion to a public terminal opens the conversation up to problems with the existing terminal building as well as other parts of the site. The most notable problems include the existing terminal and parking not being ADA compliant and the basement having problems with flooding due to the high water table in the area. Additionally, the current nineteen parking spaces may not be adequate for the expected increase in traffic and the intersection of the airport entrance, Wright Brothers Drive, and Congress Street is awkward. Another issue with Wright Brothers Drive is the culvert at the Congress Street end of the road overflowing during large storms or snow melt.

The goal of this project is to propose a site layout that addresses as many of these problems as possible, as well as provide the client with various options of addressing each issue individually if they so choose.

Recommendations

Below are the designed solutions we are proposing to address the concerns with the current Belfast Municipal Airport, as well as other alternatives that we reviewed.

Airport Terminal Building

Below are the alternatives and final proposals for the terminal building.

Building Alternatives

Three possible alternatives were considered to address the lack of space, outdated structure, and lack of ADA accessibility for the current terminal building. Each of these alternatives are outlined below:

New Terminal Building by Leach Field (Alternative #1)

Alternative #1 is to build a completely new terminal building approximately 50 ft West of the existing terminal between the existing leach field and plane parking spaces, shown in Figure 1 below.

The building we proposed in Appendix A page C1 is a 60 ft. x 28 ft. single story building that features an office, a maintenance room, a bathroom, and a large conference room as well as a main waiting area. The main waiting area spans the length of the building with ample room for vending machines and other forms of concessions as well as plenty of seating. There is an entrance/exit on both sides of the building with an ADA ramp leading out to the nearest ADA parking spaces on the Northeast side and a door opposite leading out to a 12 ft. x 18 ft. deck on the Southwest side.

Advantages:

- In addition to the usable space within this new building, the old terminal would remain in place as usable space for the client to do as they wish. It was expressly said that this was of interest to the client, as the old terminal building could be leased out for various uses.
- Construction would be simpler. It would be less error prone to design a new building from scratch rather than design a new addition that fits and settles well with the existing structure.
- The current terminal could remain in use while the new terminal is being constructed, leading to minimal inconvenience to the users of the airport.
- It would leave room on the Southwest side of the building for a small patio which is a feature hoped for but not required by the client.

Disadvantage:

- It is the most expensive of the three alternatives and may be harder to sell to the city council and the residents of Belfast. However, additional costs may be offset over time by profits stemming from leasing out the old terminal building.

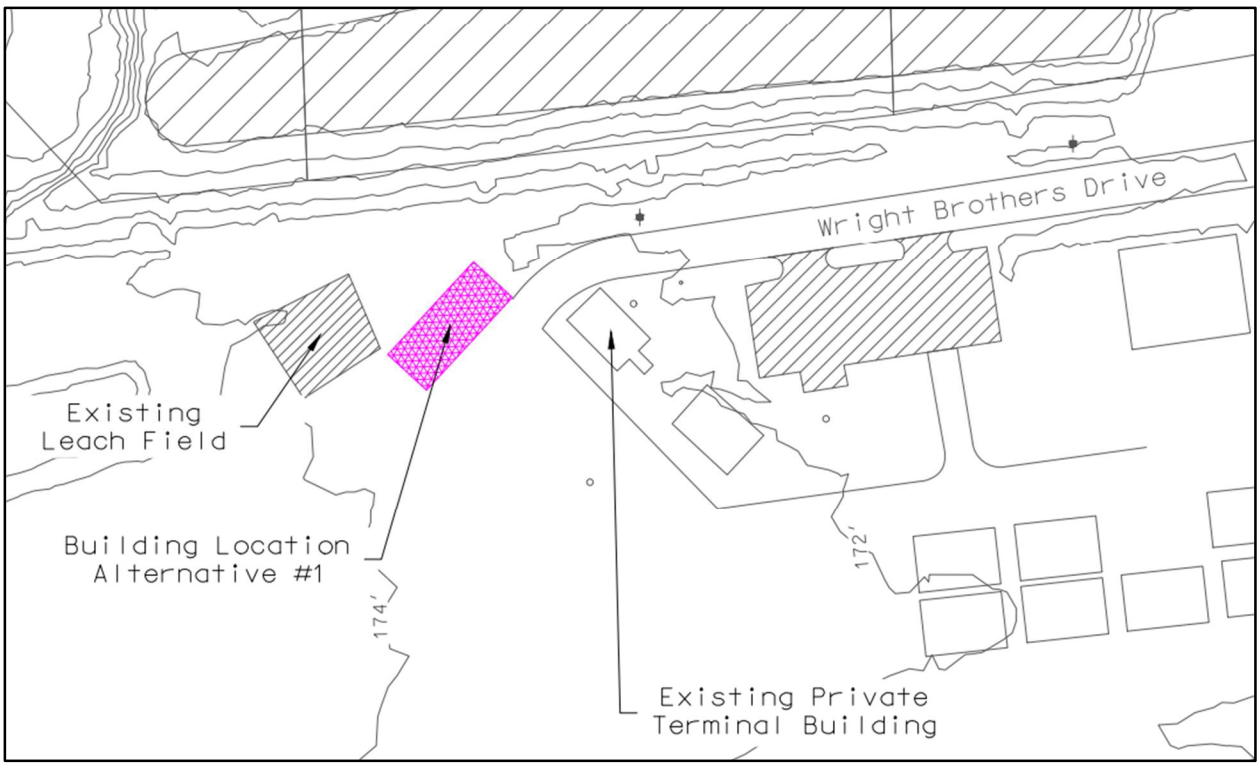


Figure 1 - New Terminal Near Existing Leach Field (Alt. 1)

Addition to Old Terminal Building (Alternative #2)

Alternative #2 is to demo a portion of the Northeast wall of the existing terminal building and construct an addition to the terminal building. This alternative is shown in Figure 2 and on page C8 in Appendix A.

Advantages:

- Relatively low materials cost.
- Ability to keep the existing terminal operational during construction.
- Retention of existing, runway-facing, deck

Disadvantages:

- Does not generate as much space as Alternative #1; however, it would still create enough space for the required features.
- Requires the relocation of utilities such as the septic tank and fire hydrant
- Possible interference with existing drainage structures and the costs associated with moving them.
- Need to check and bring the existing terminal up to current codes and regulations such as ADA laws.
- New footprint could be inconvenient to construct and may lead to non-traditionally shaped rooms

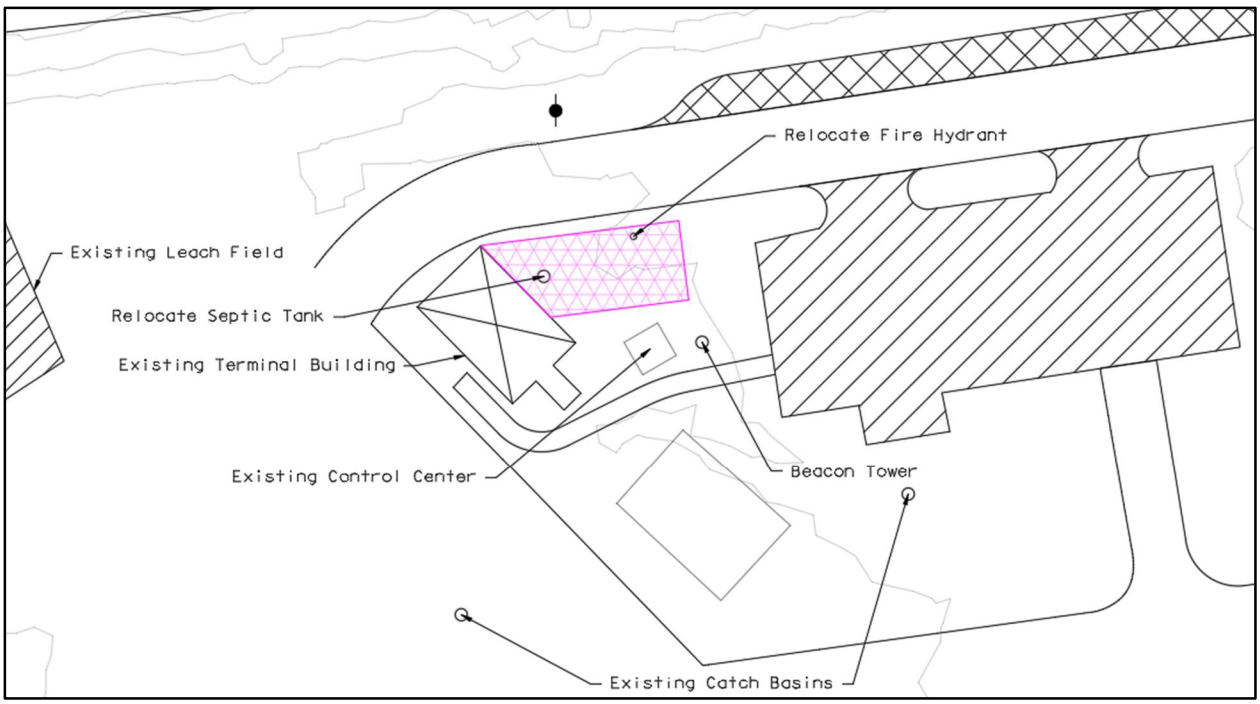


Figure 2 - Addition to Old Terminal Building (Alt. 2)

New Terminal Building in Same Location as Old Terminal (Alternative #3)

Alternative #3 is to tear down the existing terminal and build a new terminal in the same location as the current terminal. This alternative would have the same footprint as the Alternative #2.

Advantages:

- Similar constructability as Alternative #1.
- Avoidance of bringing the existing building up to code.

Disadvantage:

- Similar costs to Alternative #1 without the retained space from the current terminal.
- Additional costs associated with the demolition of the existing terminal.
- During its construction the existing terminal cannot stay in use as it would be removed.

Terminal Decision

Alternative #1, a new terminal building by the leach field was chosen as the best alternative based on criteria described below and weighted based on importance to the client.

Four criteria were used to determine the best of the three alternatives for space improvements based on the important factors to the client.

1. The estimated cost of the project was considered as the client, the City of Belfast, would need to raise public funds for the project.
2. The total amount of usable space that would be available after completion of the project.

3. Constructability of the project or how difficult and/or problematic the design and implementation could be.
4. The ability to use the existing terminal during construction to mitigate down time.

The criteria used to rank alternatives were based on importance to the client, which is also reflected in the weights applied to each criterion. Since cost is going to be the most important factor to the public, it was given the highest weight at 40%. Next, as the goal of the project was to increase the usable space of the terminal, that criteria was given 25% of the overall weight. The constructability of the project is important to both the designers and the client as it impacts both the design and construction costs. Therefore, it was given 20% of the weight. Finally, 15% of the weight was given to terminal use during construction since the ability to use the existing terminal during construction would ensure that there is no down time where the airport is without an operational terminal; However, this was not a requirement from the client.

To rate each alternative based on the criteria, a scale of 1-3 was used, 1 being poor and 3 being great. Since Alternative #1 and Alternative #3 are significantly more expensive than Alternative #3, they were both given a 1 for cost and Alternative #2 was given a 3. Since Alternative #1 produced the most amount of space, it was given a 3 for the usable space criteria; However, since Alternative #2 and Alternative #3 produced the same amount of space, which was significantly lower than Alternative #1, they were both given a 1 for usable space. Looking at the constructability of the projects, Alternative #1 would be the most straightforward alternative and thus was given a 3. Due to the concerns with fitting and settlement Alternative #2 was given a 1 for constructability. Even though building an all-new terminal is far more straightforward than the addition, since building a new terminal where the existing terminal currently sits would require demolition and cleanup, it was given a 2 for constructability. When looking at the Terminal use during construction, Alternative #1 would not affect the functionality of the current terminal, so it could be used until completion of the new terminal; thus, it was given a 3. With Alternative #2, the existing terminal could remain operational during construction, however, that construction would likely cause some disturbance within the terminal, so it was given a 2. Finally, since Alternative #3 involved the demolition of the existing terminal, it could not be used during construction, so it was given a rating of 1.

The decision matrix shown in Table 1 below displays the information described above and highlights the overall rating of each alternative, which was used to make the decision on the best alternative for this project.

Table 1 - Terminal Building Alternatives Decision Matrix

Criteria	Weight (%) DAT (w)	New Terminal by Leach Field (r)	New Terminal by Leach Field (w x r)	Addition to Old Terminal Building (r)	Addition to Old Terminal Building (w x r)	New Terminal Building in Current Building Location (r)	New Terminal Building in Current Building Location (w x r)
Estimated Cost	0.40	1	0.40	3	1.20	1	0.40
Usable Space	0.25	3	0.75	1	0.25	1	0.25
Constructability	0.20	3	0.60	1	0.20	2	0.40
Terminal Use During Construction	0.15	3	0.45	2	0.30	1	0.15
Weighted Total	1.00		**2.20**		**1.95**		**1.20**

Proposed New Terminal Building Design

Building

We propose that the new terminal building be constructed following the structural and architectural drawings found in Appendix A. We expect that trusses will be a less expensive roof solution. We designed a rafter/beam roof system as part of our academic requirements this semester.

Foundation

We propose that the foundation for the new terminal building consist of a stem wall and strip footings along the length of the exterior walls with raft footings underneath interior structural columns. We also propose that the building have a slab on grade and that the foundation have a perimeter drain system around the entire foundation. These drains aid in draining the soil adjacent to the foundation and carry the water away from the building. This promotes better durability of the concrete foundation and lower likelihoods of frost damage. Details of this drain system can be found on page S12 of Appendix A. Lastly, we propose that the foundation be sealed with a waterproofing membrane and expanded polystyrene (EPS) insulation to prevent heaving from occurring under the building. Drawings for these proposed elements and details can be found in Appendix A.

Major Assumptions

Load Determination

The terminal was designed in accordance with the International Building Code. It is a light-framed, single-story, wood building. The building is 60 feet by 28 feet, 1,680 square feet. Loads were determined in accordance with ASCE 7-22, and some material properties were

determined through supplier resources when needed. Drawings for the building and architectural drawings used to perform design and analysis calculations are supplied in Appendix A.

Foundation Parameters

Due to a lack of information for the soil properties beneath the proposed terminal building location, assumptions were made to complete the design of the building's foundation. In the design of foundation dimensions, we assumed a typical bearing capacity for sand and gravel fill. We did not perform analysis of foundation serviceability requirements such as settlement over time due to the lack of information. We suggest the client hire a geotechnical engineer to perform a subsurface investigation at the location of the proposed building. This subsurface investigation should consist of at least two borings at opposing corners of the building. The goals of the subsurface investigation are to find bedrock depth and to understand soil layering and properties beneath the building. This investigation will either verify or disqualify the assumptions used in the design of the foundation. If the assumptions are found to be unconservative for the site, the design of the foundation should be revised by a qualified geotechnical engineer.

It is important to note that the insulation beneath the foundation and along the exterior of the stem wall was not designed and should be designed to provide an adequate barrier to heat loss. We also did not design the size of the pipe for the perimeter drain or the gradient at which it should slope.

Utilities

In addition to the construction of a new building, we included possible paths for utilities based on available information that can be seen in Appendix A page C1. These utilities include overhead power lines, water lines, and a connection to city sewer. Since the location of the water service line from the current building to the onsite fire hydrant is unknown, the new water line is shown as connecting directly with the fire hydrant. It is recommended that before finalizing plans, the client perform an investigation to locate the existing water line and connect it to that rather than the fire hydrant. The routing of overhead power lines to the new building includes the addition of a new power pole. This was done to prevent active power lines from hanging over the ADA parking spots. Finally, this design includes a connection to city sewage that runs under Wright Brothers Drive, as the client wanted to avoid moving or upgrading the current septic system.

The client suggested that we explore a cheaper alternative to the new terminal building. We proposed an addition to the existing building as a solution. For this to be an option, the existing septic tank would have to be moved. Since the client is expecting more people to use the terminal following our proposed upgrades, the size of the leach field may need to be increased as well. The costs associated with these things will be outlined further in our cost estimation later.

Parking

Additional Parking Alternatives

Three possible alternatives were considered to address the need for additional parking. Each of these alternatives are outlined below:

Addition to East Side of Current Lot (Alternative #1)

Alternative #1 for adding more parking spaces within the airport is to extend the parking lot to the East, as shown in Figure 3 below.

Advantages:

- Adds 4 - 5 more parking stalls.
- Will not interfere with taxiways.

Disadvantage:

- The area of land this proposed extension would cover is possibly going to serve as the location of a new hangar bay that has yet to be installed.
- Does not address the issue of ADA accessibility.

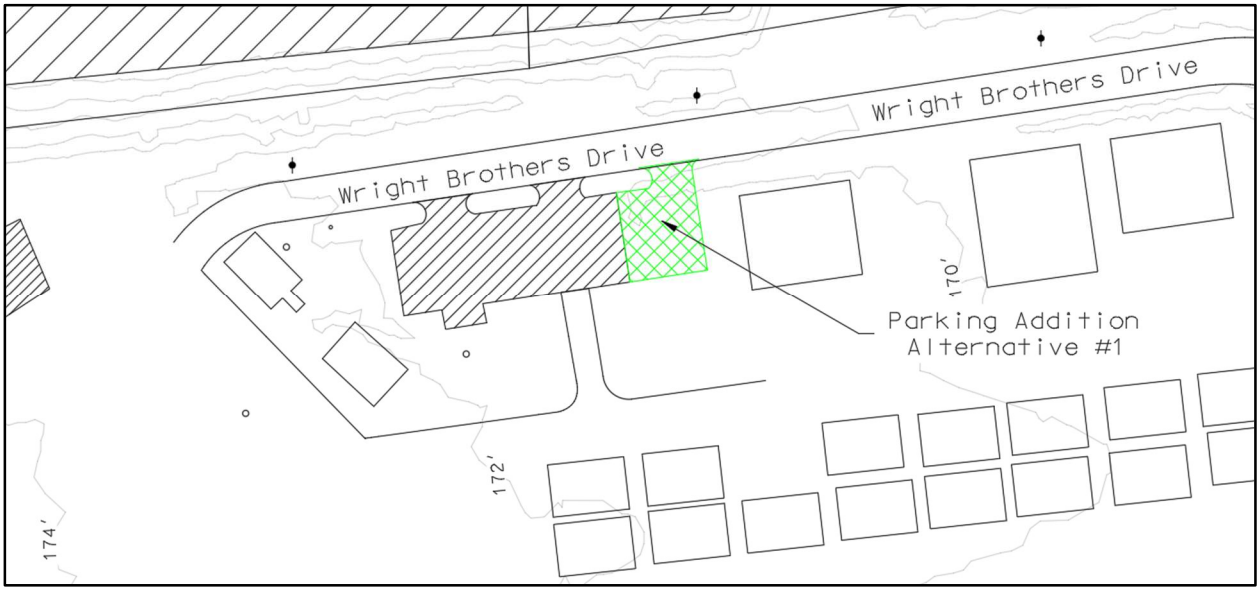


Figure 3 - Addition to East Side of Current Lot (Alt. 1)

Parallel Parking Along Wright Brother's Dr. (Alternative #2)

Alternative #2 for additional parking is to add bays of parallel parking running along the north edge of Wright Brothers Dr., as shown in Figure 4 below.

Advantages:

- Wright Brothers Dr. is long enough to add plenty of parking spaces
- Due to the nature of parallel parking, it is easily accessible from the road.

Disadvantage:

- There will need to be a turnaround area available at the end of Wright Brothers drive for when cars exit the spots. This can be in the form of a cul-de-sac or a turnaround that cuts through the existing parking lot.

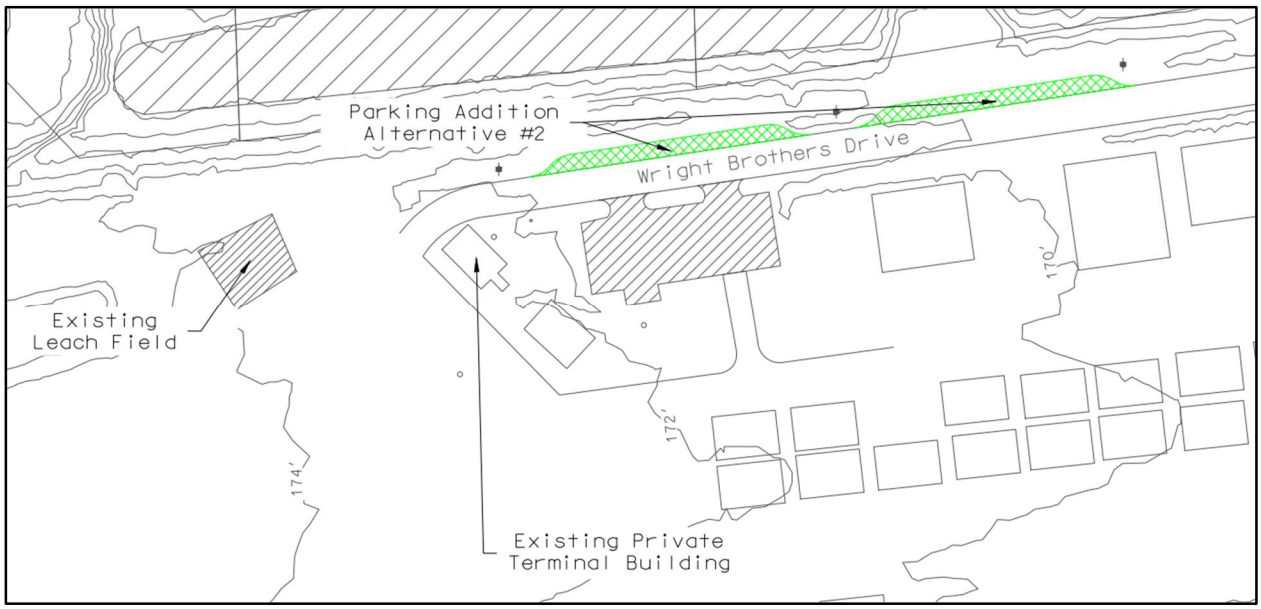


Figure 4 - Parallel Parking Along Wright Brothers Dr. (Alt. 2)

ADA Parking North of Existing Terminal (Alternative #3)

Alternative #3 is the addition of an outlet parking area that would consist of two ADA parking spaces to the Northeast of the chosen new building location, shown in Figure 5 below.

Advantages:

- Choosing the alternative of designing the new terminal by the leach field makes this alternative a desirable location for handicap accessible parking.
- There is no need to add a turnaround that would be useful for these spots since the parking spaces will be perpendicular to the road allowing vehicles to pull out in either direction.

Disadvantage:

- It will be located on the other side of a gate at the end of Wright Brothers Dr. This gate would be moved further Southwest to accommodate the addition of these spaces.

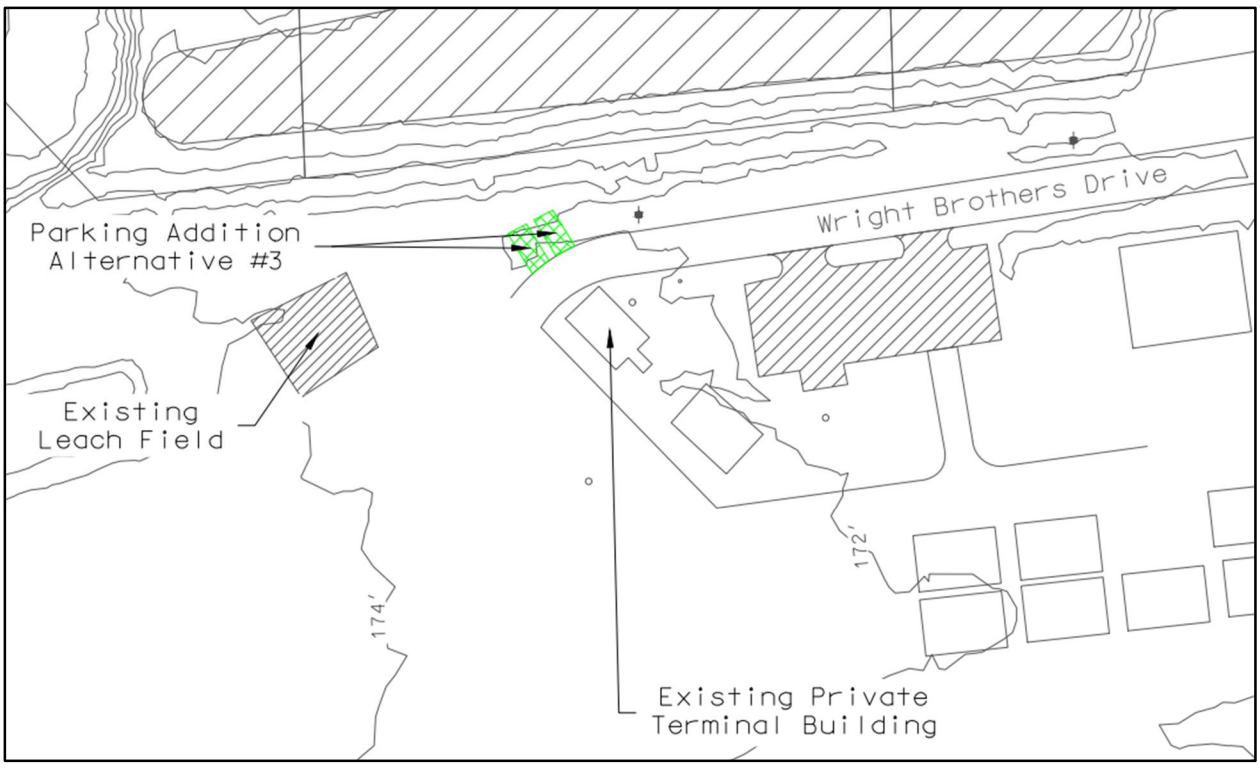


Figure 5 - ADA Parking North of Existing Terminal (Alt. 3)

Parking Decision

Based on the information presented above, it has become apparent that the best decision for our client will consist of a combination of Alternative #2 and Alternative #3. Since we will go into significant design for a new terminal by the leach field, ADA parking shown in Figure 5 is necessary to comply with both our client's needs as well as ADA requirements. In addition, we were able to rule out Alternative #1 quickly after learning that the client plans to add another hangar on the eastern end of the existing parking lot. With the exclusion of Alternative #1, that only leaves Alternative #2 to meet the client's needs of having more general parking.

Proposed Parking Additions

Parking and Striping Design

We have developed plans for the construction of two ADA parking spaces adjacent to the proposed terminal. These spaces include proper striping, 4-foot striped clear zones on both sides, plastic parking barriers at the front, and appropriate handicapped signage and striping. Our design adheres to the Belfast Code of Ordinances governing handicapped parking.

Page C2 in Appendix A also illustrates our design for two new parallel parking lots, each capable of accommodating six cars. These lots incorporate striping for the parking spaces, clear zones at each end, and plastic parking barriers separating the parking spaces from the sidewalk. No signage is required for the parallel parking configuration.

We have created pavement thickness designs for both the parking areas, sidewalk, and roadway realignment as shown on page C9 in Appendix D. The three materials used in our pavement designs are hot mix asphalt (HMA), crushed base course, and subbase gravel course.

Sidewalk Design

We have also designed a 5-foot-wide sidewalk that runs adjacent to and at grade with the parallel parking spaces. This is shown in Appendix A page C1. The sidewalk was originally suggested by the client and is intended to serve pedestrians walking to and from the terminal and parallel parking. It is noted that the sidewalk circumvents the utility pole between both sections of parallel parking. This deviation is designed to both avoid moving the pole as well as create space for a small garden to improve aesthetics. The sidewalk should maintain the same grade as the roadway and parallel parking for drainage purposes.

Crosswalk Striping

In addition to the main sidewalk, we propose a crosswalk to connect the northwest corner of the existing parking lot to the new sidewalk on the opposite side of the road. To connect this crosswalk to the parking lot and sidewalk two small connector sidewalks are also proposed as shown in Appendix D page C3. To keep the connector sidewalk accessible on the parking lot side, the northwest most parking spot will be converted into a no parking area.

Roadway

Roadway Improvement Alternatives

Three potential alternatives were identified with regards to improvement of Wright Brothers drive, they are outlined below:

Straight Wright Brothers Drive Alignment (Alternative #1)

Alternative #1 for the improvement of Wright Brothers drive is to straighten the road such that it makes no bends from its end point next to the existing terminal all the way to where it would perpendicularly connect to Congress Street. This would make it easier to allow larger construction type vehicles to use the road. However, a difficulty in this would be that excavation and fill would likely be required to accomplish it along with a retaining wall due to the large elevation change at the end of the proposed location nearest to Lower Congress Street which we need to be evened out to make it usable. The current design incorporates a 10% downward slope to connect with Lower Congress Street.

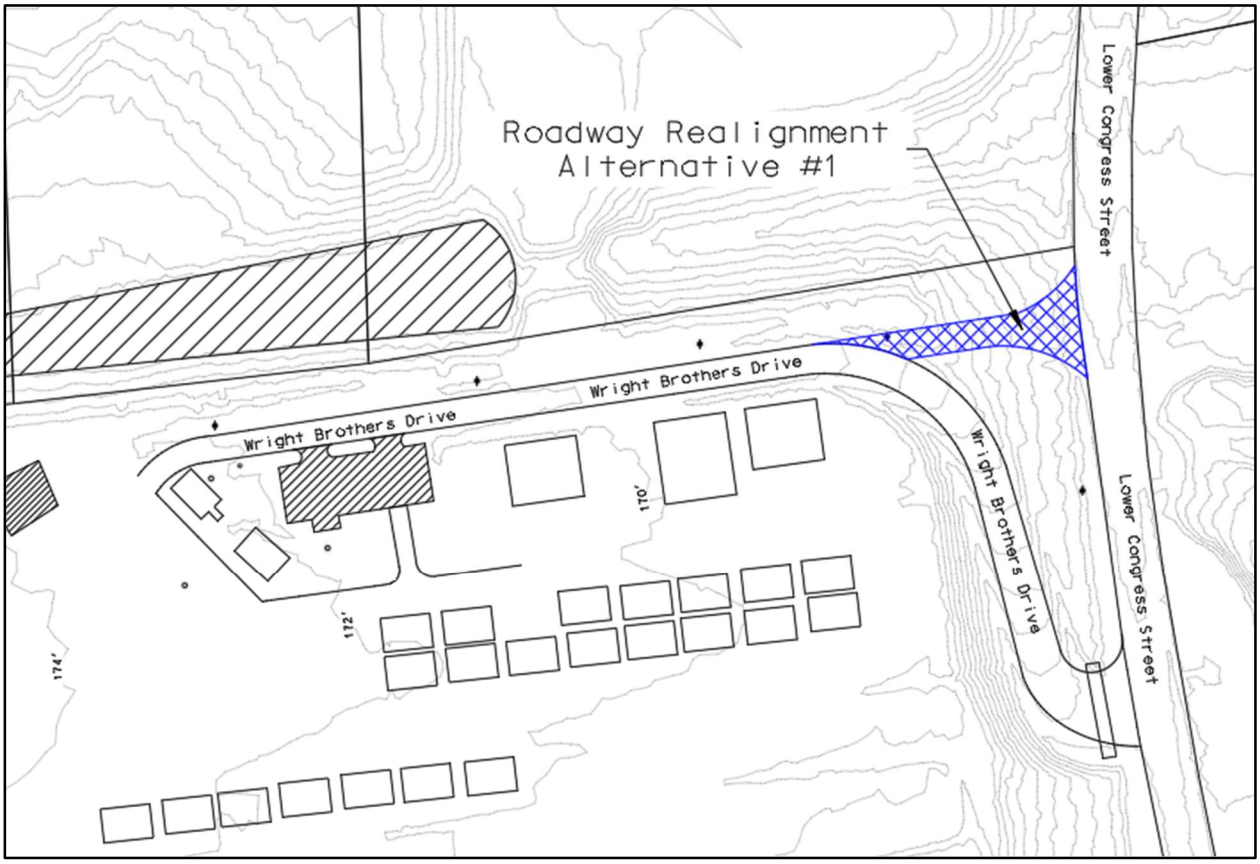


Figure 6 - Straight Wright Brothers Drive Alignment (Alt. 1)

Widened Entrance to Wright Brothers Drive (Alternative #2)

Alternative #2 is to keep the existing roadway relatively unchanged and only widen it where it currently intersects with Lower Congress Street, as shown in Figure 7. This could be useful in allowing larger vehicles to access it and improving the ability to transition on or off of

the road. This, however, would not solve the issue as this does not increase the turning radius for trucks travelling South on Lower Congress Street turning onto Wright Brothers Drive. This alternative would also require the existing culvert under the entrance of Wright Brothers Drive to be lengthened.

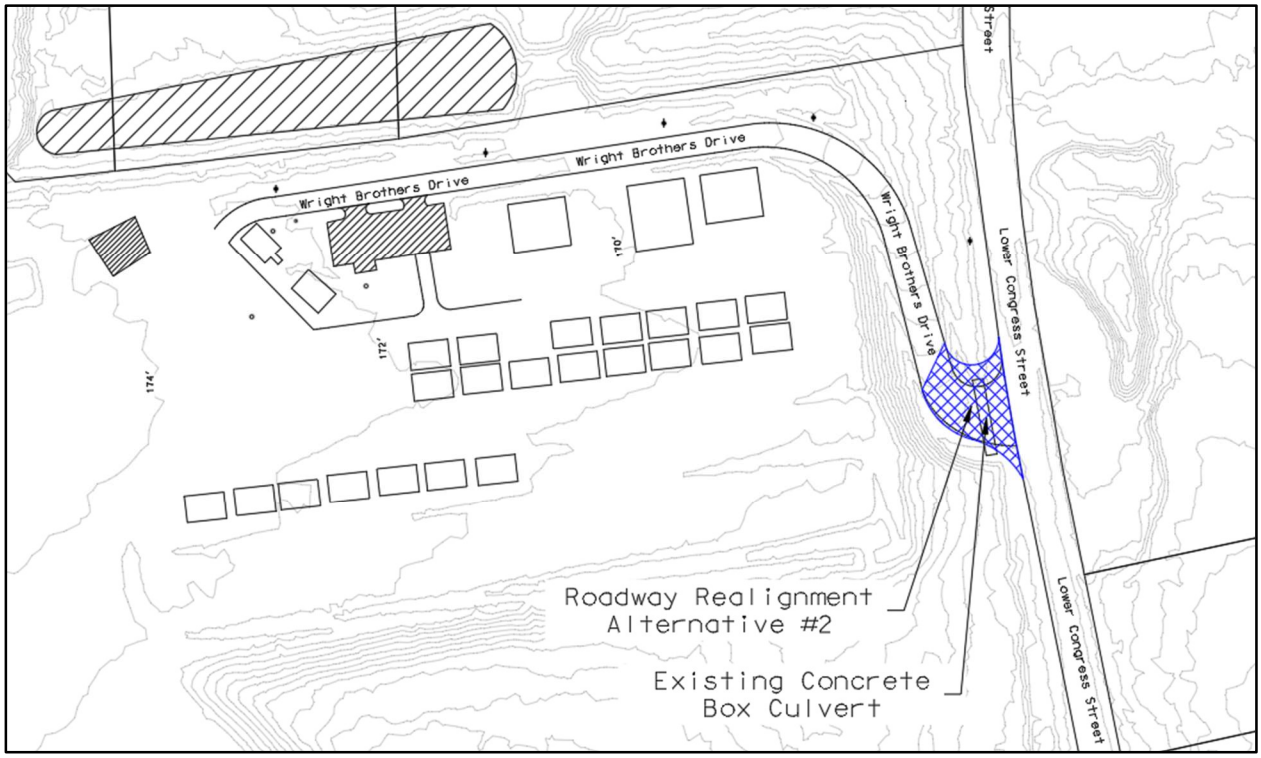


Figure 7 - Widened Entrance to Wright Brothers Drive (Alt. 2)

No Change (Alternative #3)

Alternative #3 is to keep the existing roadway completely unchanged and overcome any future difficulties with solutions that do not involve making changes to the roadway in question, such as using a different access point. This does not solve the potential accessibility problem.

Roadway Realignment Decision

Alternative #3 was chosen for the roadway improvements, which was no change to the existing Wright Brothers Drive. Based on the criteria and weights detailed below it was determined that to keep Wright Brothers drive the same was the best course of action and in the best interest of our client.

There were three criteria considered in the determination of the best of the three roadway realignment alternatives.

1. Cost. This is keeping with the best interests of our client who requires public funding for such expenditures.
2. Safety. The roadway in question should be accessible to the public and not put users at risk.

3. Large vehicle access. With the future construction of this new facility likely to require large multi-axle vehicles to come on site, an improvement to the current geometry of Wright Brothers drive would be desirable.

The weight of the estimated cost was 50%, the heaviest weight of the three criteria. This is because the road is currently functional, and funds are rarely allocated to fix something that is currently serving its purpose. Safety was weighed the second highest at 35%. The roadway needs to provide safe travel to and from its endpoints as well as safe transition onto and off of the main road that it connects to (Congress St.). The lowest weighted of the three criteria at 15% was large vehicle access. This is because while it would be helpful to have easier access to the proposed structure location, we have been informed that large construction vehicles have made it on site before via Wright Brothers Dr. There is also the alternative of using Airport Rd., if necessary, which is much more accessible. However, it does require special permission to gain access to the airport.

A 1-3 scale was used to rate each of the three criteria, 1 being the worst and 3 being the best. For estimated cost the straight roadway with grade change (Alternative #1) received a 1 due to its large cost compared to the other alternatives. Widening the end of the road (Alternative #2) received a 2 in the cost criteria because although it costs more money than Alternative #3, it is significantly less than Alternative #1. Keeping the roadway the same (Alternative #3) received a 3 in the cost criteria because it costs no money at all.

For safety, Alternative #1 received a 1. Due to the elevation change and short length of Wright Brothers Dr., the grade of the road would be very steep. This may cause accidents for vehicles driving down it in inclement weather. Alternative #2 received a 2 because the state of the road would not change. The widening at the end of the road would only help with initial accessibility and would not provide a larger line of sight when exiting since no trees are anticipated to be removed at this time. Alternative #3 also received a 2 since no changes will be made to improve safety.

For large vehicle access, Alternative #1 received a 3 since it eliminates all turns that were previously required. Alternative #2 received a 2 since it will improve the approach angle of larger vehicles, making access easier, but will not improve the rest of the turns. Alternative #3 received a 1 as it addressed none of the problems.

The decision matrix shown in Table 2 below displays the information described above and highlights the overall rating of each alternative, which was used to make the decision on the best alternative for this project.

Table 2 – Roadway Realignment Decision Matrix

Criteria	Weight (%) DAT	Straight Road with Grade Changes (r)	Straight Road with Grade Changes (w x r)	Widened End of Road (r)	Widened End of Road (w x r)	Keep Roadway Same Rating (r)	Keep Roadway Same (w x r)
Estimated Cost	0.50	1	0.50	2	1.00	3	1.50
Safety Concerns	0.35	1	0.35	2	0.70	2	0.70
Large Vehicle Access	0.15	3	0.45	2	0.30	1	0.15
Weighted Total	1.00		**1.30**		**2.00**		**2.35**

Vertical and Horizontal Curve Design

We do not suggest the realignment of Wright Brothers Drive. However, if the client chooses that they want to realign Wright Brothers Drive, we have provided the designs that we would propose if we were suggesting the roadway realignment.

Page C10 in Appendix A presents our vertical and horizontal curve designs. Our primary focus was on the vertical design, and we did not assess the horizontal aspect for simplification. The current design adheres to AASHTO curve length standards. However, a retaining wall would be necessary near the hangars due to extensive cutting along Wright Brothers Drive, which falls outside our scope of work. The current design features a compound curve with a maximum grade of -10% and smooth transitions into Congress St. and Wright Brothers Drive.

An additional concern is the placement of a utility pole, which needs to be relocated northward to avoid construction. Furthermore, our client raised a safety issue during a recent meeting. The steep grade we've designed may pose challenges for vehicles navigating the hill, particularly during winter. Considering these considerations, we advise our client against adopting this design and recommend maintaining the existing roadway configuration.

Roadway Realignment Details

In addition to the preliminary roadway realignment sketch in Figure 6, we have provided drawing details concerning the roadway and parking pavement thickness as well as the vertical curvature that adheres to AASHTO design standards located in Appendix A page C10.

Drainage

In this section we discuss the peak discharges determined for the watershed area delineated around Belfast Airport, both before and after construction. The changes primarily stem from the increase in impermeable areas with the new terminal building and new parking facilities.

Site Characteristics

Pre-Development

The current site consists of a system of gravity-based storm drains that lead down from the runway towards Lower Congress Street. A retention pond located to the north of Wright Brothers Drive connects to a ditch line that runs parallel to Lower Congress Street through a culvert under Wright Brothers Drive. The existing impermeable area is approximately 11.5 acres.

Post-Development

Based on an expected 0.1 acre increase in impermeable surface after project completion, for a total impermeable area of 11.6 acres, we obtained predicted peak flow data to give base dimensions of appropriate culvert sizes for corresponding flows. These design sizes are meant as a starting point for the client if they want to do culvert resizing. It was observed that the peak discharge data before and after had no variation with the small impermeable surface increases. While the increase in drainage appears negligible, the existing culvert is undersized, and a larger culvert is recommended.

Watershed Area

The total watershed area is 52.7 acres. There is roughly a 65 ft elevation change within the watershed, with the northern side being the higher elevation and the southeastern side being the lower elevation. The relative path that water will drain through the watershed starts from the northern side by Route 1. It drains southeast towards the retention pond above Wright Brothers Drive, continues eastward through the retention pond toward Congress St., and then follows Congress St. to the culvert to the south. This trend is shown below in Figure 8.

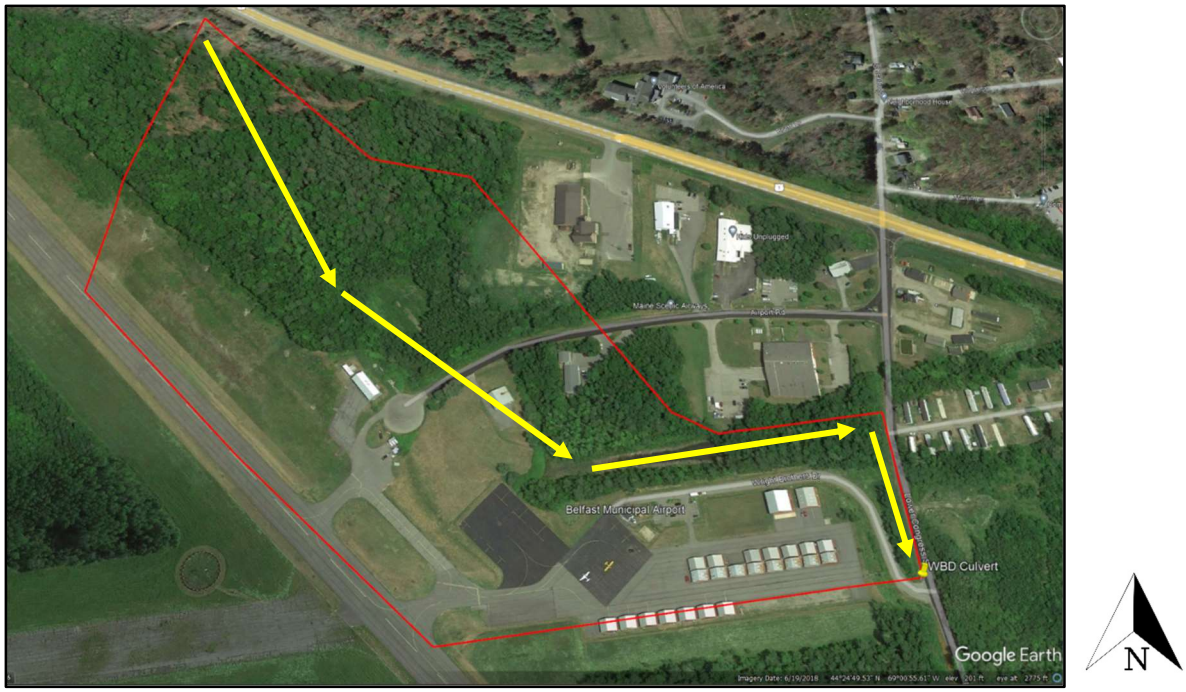


Figure 8 - Delineated Watershed Around Belfast Airport

Contributing Off-Site Drainage

Figure 8 shows the watershed area in red, which surrounds the area of interest for the project. Any runoff from the nearby industrial park appears to be diverted towards Route 1. Therefore, minimal runoff from off-site sources were noted and so all analyses were strictly based on any runoff that occurred within the delineated watershed.

Solutions

Culvert Sizing

The existing culvert has a 3'-6" clear width and 1'-4" clear height and cannot meet the demand of a 10-year storm. We propose that the existing culvert under Wright Brothers Drive be replaced with a culvert that has a minimum of a 5'-0" clear width and 1'-4" clear height. It should be noted that alternate heights of the culvert were not analyzed since a change in clear height of the culvert would require a change in finished grade of the entrance to Wright Brothers Drive. The proposed clear width would meet the hydraulic demand of a 25-year storm. We chose this bottom width dimension after comparing costs between the different probability storms. The result of this analysis is summarized In Table 3 below, but the costs are further detailed in the Engineers Opinion of Cost section of this report. Please note that costs were not looked into for the 10-yr storm design, as we recommend designing for at least a 25-year storm. In addition, the proposed culvert detail can be found in Appendix A page C6.

Table 3 - Approximate Culvert Dimensions Based on Peak Flow Data

Storm Year Type	Annual Probability of Occurrence	Peak Flow (CFS)	Approximate Calculated Culvert Width (ft)	Minimum Clear Width	Estimated Cost
10-Yr	10%	56	3.9	4’ - 0”	Not Recommended
25-Yr	**4%**	**72**	**4.7**	**5’ - 0”**	**$21,000**
50-Yr	2%	88	5.6	6’ - 0”	$26,000
100-Yr	1%	102	6.3	7’ - 0”	$37,000

Stormwater Management

In addition to the culvert replacement, we recommended utilizing certain Low Impact Development (LID) strategies to reduce peak flows. Some of these strategies include rain gardens, drip lines, and permeable pavement. For this application, a rain garden with a footprint of 150 square feet, with dimensions of 15’-0” by 10’-0,” is recommended.

The purpose of this LID would be specifically to handle flows from the roof of the new terminal building. A rain garden detail can be found attached in Appendix A on page C5. This detail was obtained using information from the Maine Stormwater BMP Design Manual. It should be noted that since the site contains soil type A (well drained), the rain garden does not require an impermeable liner.

Special consideration should be given to the chosen plantings for this rain garden as well. We recommend consulting a landscape designer or architect to help with choosing the best plants for the application. However, we did look at some ways to reduce the potential of attracting animals such as deer and waterfowl, which would be problematic for an airport property. Certain deer repellant seed combinations can be used to discourage deer from coming near. For example, including lavender as a plant might be a good idea since deer dislike the smell of it. In order to prevent geese from flocking to the property, there are certain goose repellent sprays that can be used. In addition, just keeping the grass relatively long can also work.

By using one or a combination of these methods, the quantity and velocity of water flowing towards the culvert is decreased. This could allow a smaller culvert option to be able to support the peak flows of a 25-year storm.

Erosion and Sediment Control During Construction

During construction, certain erosion control measures should be taken. Silt fences are recommended to be installed and maintained for the duration of construction to prevent the conveyance of sediment to nearby surface waters. As per the EPA, these fences last between 6 and 12 months depending on how disturbed the soil is. This means that they may need to be replaced at least once in order for them to provide erosion control for the entire construction period. A silt fence detail can be found attached in Appendix A on page C7.

The other area of concern is the particulate matter that could be kicked into the air during construction where it could then more easily enter the nearby water retention pond. This would need to be handled by keeping the soil moist by various methods including using water trucks to pre-wet surfaces before construction and blowers to prevent suspension of dust in the air.

Storm Drainage Outlets and Downstream Analysis

The outfall location of existing drainage for the storm drains exits the hillside to the west of Wright Brothers Drive as indicated by the yellow box in Figure 9. A ditch runs along the side of the road to Lower Congress Street. This ditch spills into a ditch that follows the west side of Lower Congress Street. The Wright Brothers Drive ditch spills into the Lower Congress Street ditch where a culvert crosses the driveway for Wright Brothers Drive. This will need to be taken into account for future culvert designs for scour. No new drains will be created as the development areas border the retention pond or existing drains and water runoff will be directed towards these.

Figure 9 - Outfall Location for On-Site Storm Drains

More in depth investigations of downstream scouring caused by the exit velocity of the culvert and storm sewer drainage is recommended for appropriate culvert sizing measures and water velocity reduction from the storm line drainage. See anything missing?

Design Limitations

The modeling software used to obtain the peak discharge values has some limitations. Shown in Figure 10 in a blue box is the elevation profile of the retention basin located north of Wright Brothers Drive.

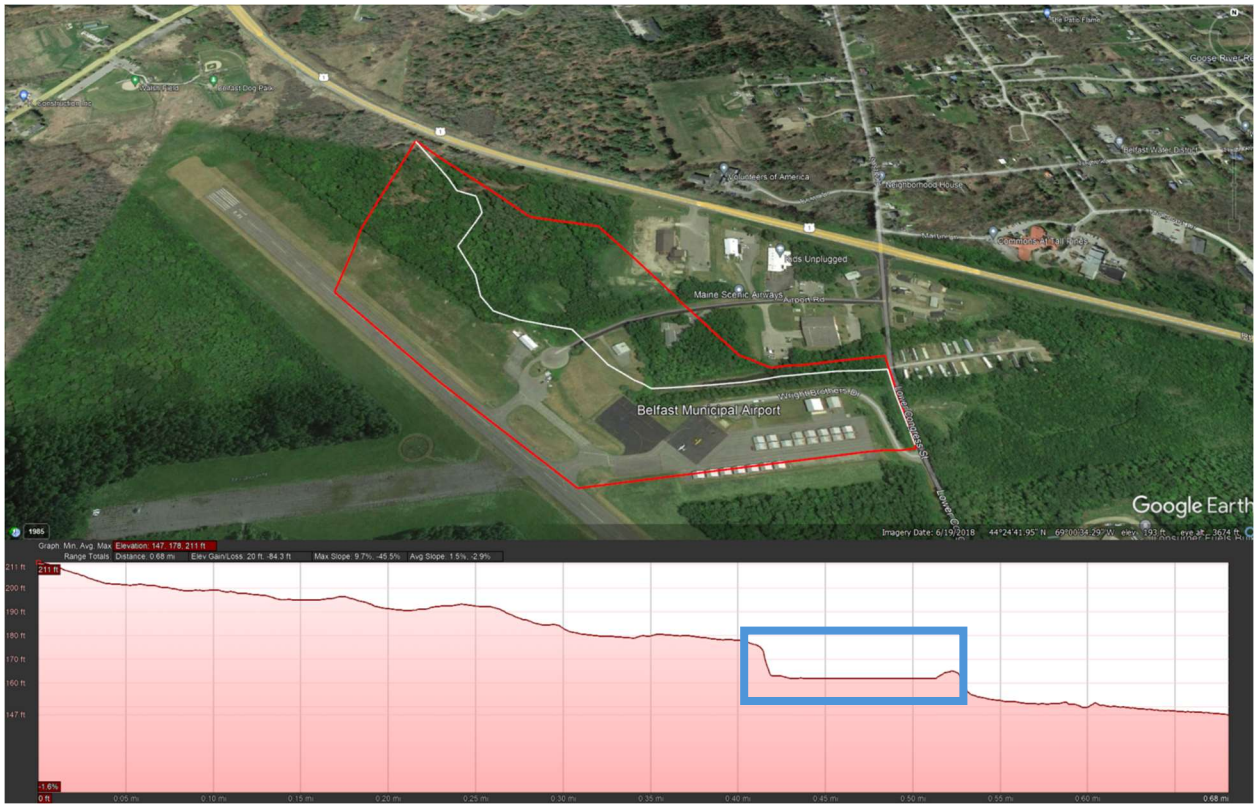


Figure 10 - Elevation Profile of Longest Possible Flow Path with Indicated Retention Pond

As seen in the blue box in Figure 10, there is an approximate 3-foot elevation increase before the slope starts trending downward again. This appears to indicate some sort of spillway that is intended to allow overflow once the retention basin fills with water. This is significant because if taken into consideration with the hydrologic model, this could reduce peak flows and decrease the necessary culvert size. However, WinTR-55 doesn't have that level of detail. It is recommended that further hydrologic analyses be undertaken in order to obtain more accurate peak discharge values.

Permit Requirements

Federal Permits

Notice of Proposed Construction or Alteration

- The attached notice (see appendix) requires details about what the notice is for, the duration of the project, what is being constructed, and the location of the project.
- This notice is required by the FAA for any projects related to airport construction or alteration and is to be filed at least 45 days prior to proposed construction.
- There is no cost to fill out this notice.

State Permits

Maine Construction General Permit

- The attached general permit (see Appendix B) requires project information as well as existing and proposed plans that comply with Maine DEP standards.
- This general permit is required by the Maine DEP for any land-based construction activities.
- The cost of the general permit is a minimum of $137 in accordance with the Maine DEP Fee Schedule (see Appendix B).

Driveway/Entrance Permit

- The attached driveway/entrance permit (see Appendix B) requires details about the location, usage, as well as the existing and proposed site plans.
- This permit is required by Maine DOT prior to any site work or construction on town owned roads.
- The cost of this permit is at least $55 according to the Maine DOT.

Stormwater Permit

- Since the project has a total disturbed land area of 0.2 acres, which is less than the 1-acre trigger, the Stormwater Permit is avoided.

Municipal Permits

Building Permit

- The attached building permit (see Appendix B) requires the site-specific details of usage, sizing, materials, and zoning used for the structure. The City of Belfast also requires completed site drawings to accompany the permit to ensure compliance of MUBEC, ASHRAE, and town water ordinances.
- A building permit application is required by the City of Belfast for any new construction, or additions done to structures.
- The cost of the building permit is a minimum $75.00 fee and is based on 0.0075 times the cost of the construction in accordance with the City of Belfast Permit Fee Schedule (see Appendix B).

Demolition Permit

- The attached demolition permit (see Appendix B) requires the location, description of the demolished structure, and method of disposal to be disclosed to the City of Belfast.
- A demolition permit application is required by the City of Belfast for any demolition that is performed. Methods and expenses for disposal can vary depending on the type(s) of material(s) being disposed of.
- The cost of the demolition permit is $50.00 in accordance with the City of Belfast Permit Fee Schedule (see Appendix B).

Electrical Permit

- The attached electrical permit (see Appendix B) requires the location, type of structure and service, name of installer, and device connection information to be disclosed to the City of Belfast. Plans for electrical changes or additions are required along with the permit application.

- An electrical permit application is required by the City of Belfast for any service changes or additions made to a structure.
- The cost of the electrical permit is a $75.00 minimum fee plus 1% of the electrical work price in accordance with the City of Belfast Permit Fee Schedule (see Appendix B).

Plumbing Permit

- The attached plumbing permit (see Appendix B) requires the location, structure type, connections, and installation member names to be disclosed to the City of Belfast. The permit also requires a plumbing inspection to be carried out by a qualified inspector.
- A plumbing permit application is required by the City of Belfast for any changes or new plumbing features installed in or around a structure.
- The cost of the plumbing permit is a $40.00 minimum fee and $10.00 per fixture connected in accordance with the City of Belfast Permit Fee Schedule (see Appendix B).

Water Service Permit

- The attached water service permit (see Appendix B) requires the location description, plans for plumbing changes or additions, service required, and property owner authorization. The types, terms and conditions for water service installations needed to be followed as denoted on the second page of the permit application.
- A water service permit application is required by the City of Belfast for any changes or new connections made to existing fixtures in or around a structure.
- The cost of the water service permit is based on the distance of the structure to the water main.

Sewer Connection Permit

- The attached water service permit (see Appendix B) requires the location, items to be serviced, estimated gal/day usage, and authorization from the Superintendent of the City Wastewater Treatment Plant and Director of Public Works.
- A sewer connection permit application is required by the City of Belfast for any changes or new connections made to existing fixtures in a structure.
- The cost of the permit is based upon any assessment fees, total connections, and gal/day usage amount.

Project Risks

With any project, it is important to consider the impacts on the health of the surrounding community and the local environment. This Health and Local Environmental Impact Assessment (HLEIA) discusses the impacts of our project, which proposes a new terminal for the City of Belfast and its residents.

General Demographics

Belfast is home to an older population, with the median age being 60 years old. Out of the 7,000 residents, 5,900 (84%) of them are adults above the age of 18 with 2,600 (44%) of them being above 62 years old (62 years old is considered senior or retirement age according to the Social Security Administration) as is further illustrated in Figure 11 from the World Population Review (WPR) Belfast Maine Population Report. Note that each bar is representative of a 5-year age range (The first bar is ages 0-4.99, the second bar is 5-9.99 and so forth).

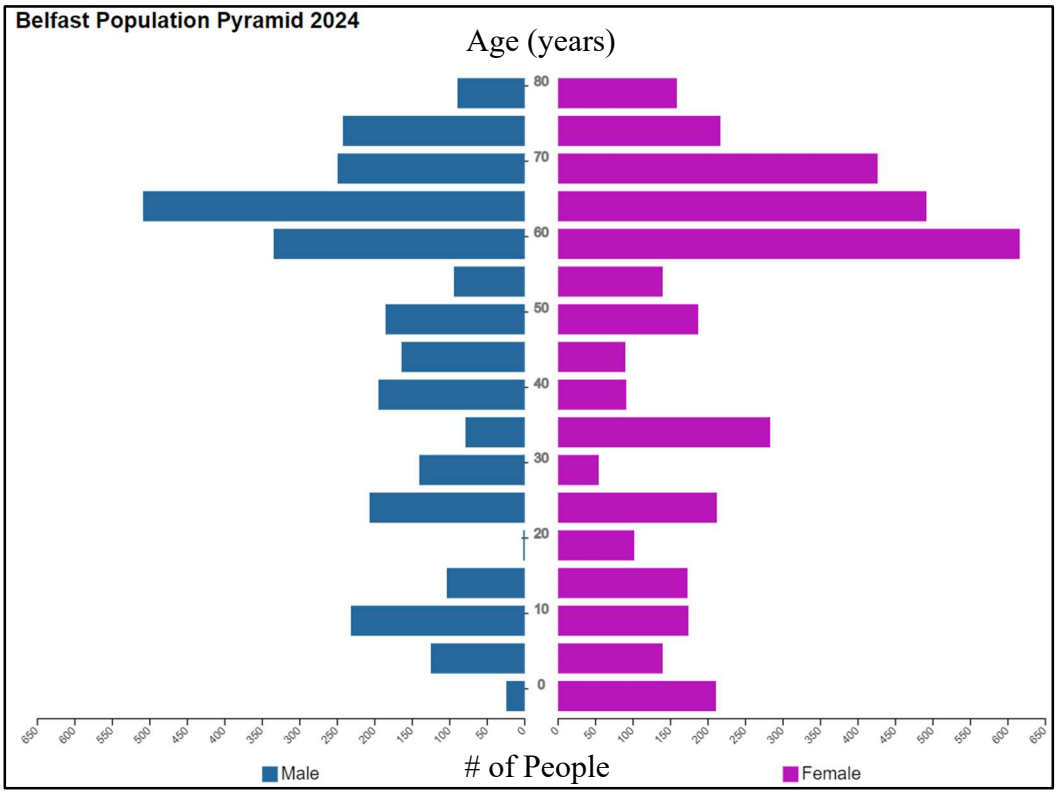


Figure 11 - Belfast Population by Age

With the population of the city being one-third seniors, high priority is put on minimizing noise pollution. This is because elderly and youth are more susceptible to effects brought on by noise caused by construction equipment and vehicles. The potential impacts of these situations are discussed further in the Construction Impact section.

The City of Belfast has a median household income of $61,000, which puts the city about 10% below Maine's median income of $68,000 and about 18% below the national average of $74,000 in 2022, according to the World Population Review. Belfast also currently has a poverty

rate of 20%, which is nearly double that of the state's average of 11%. These issues highlight the need to reduce the cost of the project overall so as to prevent strain on the city's budget and the people living there. With that in mind, the project intends to use allocated funds in a cost-effective manner so that the city's budget has availability for other more pressing projects. The project will only see some temporary construction jobs added as Belfast does not continually see large building projects (where most new permanent construction jobs come from), with this project being on par with building times similar to a new medium sized house. Our client stated that they do not expect increases to direct airport employment, however, if the old terminal building is repurposed and rented out it could provide several jobs depending on the type of entity occupying the space. Development of a modern terminal and new facility accessibility coupled with the newly installed refueling tank would see both aviation enthusiasts and business travel gradually increase as it would be able to compete with newer airports that have similar amenities.

Impacted Communities

As discussed above, the population of Belfast is approximately one third senior citizens who are more prone to the effects of changes in noise pollution, especially those located in the nearby assisted living facilities. The city also has several schools and child care facilities around the perimeter of the airport, which will be subject to these effects. Potential water contamination and noise pollution brought on by the project's construction and aviation increases are the main concerns for these surrounding communities. Material that unintentionally gets into the nearby swale and drains off site can be harmful to both senior citizens and young children. According to studies performed by the National Institute of Health (NIH), exposure to construction runoff pollutants over time can cause intestinal diseases, aggravation of chronic diseases, and increase risk of dementia for senior citizens while also causing lung function deficits, respiratory irritation, and asthma in younger children. Due to the NIH findings, runoff control measurements would need to be included during construction as well as after in the forms of sediment fences, grass buffer strips near sidewalks and parking lots, or straw around the construction area per National Oceanic and Atmospheric Administration (NOAA). The upgrades will also allow for people requiring ADA amenities to access the building for the first time as the original terminal lacked ADA access.

By upgrading the municipal airport to a public airport, federal funding will be made available for the airport, making future upgrades more feasible. Increasing the airport's access and abilities will come at a cost, as increasing usage will see maintenance costs go up to meet the strict regulations for runway care, taxiway care, and building upkeep. These costs could be subsidized in a number of ways, including increasing available commerce in and out of the city, renting out the old building, and increasing shareholder and community involvement. Many of these aspects will naturally develop as the airport becomes more widely used or will be incentivized to be put into place.

Local aviators will be accommodated with a new training room within the proposed building that will allow more pilots to be instructed at a given time. This increase in capacity from the airport can allow for more revenue streams by being able to host larger groups of aviators that would pay for classes.

Construction Impact

The surrounding environment and community will be impacted during the construction of the project. Due to the proximity of the desired building location at the end of Wright Brothers Drive to the swale leading to the retention pond on the north side of Wright Brothers Drive, some material runoff could end up flowing down the waterway. Coupled with the above is the usage of vehicles and tools to bring materials, dig, and construct the building or service connections that would use fossil fuels and electricity. The quality of the air may vary as construction materials are brought to the site and used, resulting in more particulate matter emissions from dust kicked into the air.

The realignment of Wright Brothers Drive could result in the need to regrade the road to accommodate a steep slope. This could lead to soil stability issues since there are hangars within 15 feet of the edge of Wright Brothers Drive. Utilizing a retaining wall here would be beneficial in order to provide stabilization of the soil.

While the building is being constructed, there will be increases in traffic and noise on Lower Congress Street that would potentially affect the community located on R.W. MacLeod Lane and businesses on Airport Road.

Post-Construction Impact

After the project is completed, there will be an increased peak flow discharge from the additional impervious surfaces of the building and roadway. These issues will be addressed with a recommendation to utilize certain Low Impact Development (LID) strategies in order to mitigate the effects of the increase in discharge. In addition, a culvert redesign suggestion will be provided in the Design/Analyze Drainage section later on.

The old terminal building, following the construction of the new terminal, is to be left open to be used as the client deems necessary. This opens the site to future developments to further benefit Belfast's economy as airports have shown to increase total employment by 3.9% per decade on average according to Marquise J. McGraw who did a study on airport impacts on city employment growth over the years between 1950 and 2010.

With the gradual increase in use of the airport over time, Lower Congress Street and the airport would see increases in both day-to-day and seasonal traffic that would produce higher levels of noise than residents are typically used to. The increase in air traffic for the airport would see more recreational flights in and out that would utilize the refueling station, which increases the potential for refueling spills and accidents as the airport adjusts to the heightened activity on site. Combining refueling and stop-and-go traffic may also result in problems stemming from the amount of available taxi space and or congestion with local hangar lessees.

Finally, the new building will be equipped to handle larger amounts of people than the previous building and will have ADA accessibility to ensure that anyone in the community can enter easily, as about 15% of Belfast's working population is registered as disabled (U.S. Census Bureau). The ADA upgrade to the new terminal building ensures that the airport meets the requirements of the ADA of 1990 and the Rehabilitation Act of 1973 that," prohibit a public entity from discriminating against qualified persons with disabilities in access to facilities and services that the public entity provides" (Maine DOT). Meeting these acts ensures that the airport avoids the major fine of $75,000 that they would be dealt for failure to comply with the standards.

Engineer's Opinion of Cost

We have calculated a cost estimate for the proposed items and alternatives to those items. Below you will find our opinion of the cost for each.

Proposed Items

Below in Table 5 you will find the summarized estimated costs of the items we propose for this project. It is important to note that utilities such as electrical, plumbing, and heating are not included in the cost estimate of the new terminal building.

Table 5 - Estimated Cost of Proposed Items

Item	Quantity	Cost
New Terminal Building	1700 SF	$181,000
ADA Parking	2 Spaces	$5,400
Parallel Parking	12 Spaces	$65,000
Sidewalk	520 LF	$49,000
Culvert Replacement	5' Clear Width	$21,000
New Leach Field and Septic Tank	Lump Sum	$13,000
Total		**$334,400**

Alternative Items

Below in Table 6 you will find the summarized estimated costs of the items that are alternatives to what we have proposed for this project.

Table 6 - Estimated Cost of Alternate Items

Item	Quantity	Cost
Addition to Existing Terminal Building	850 SF	$92,000
Roadway Realignment	LS	$312,000
City Sewer Connection	865 LF	$94,000
Rain Garden	450 CY	$3,400

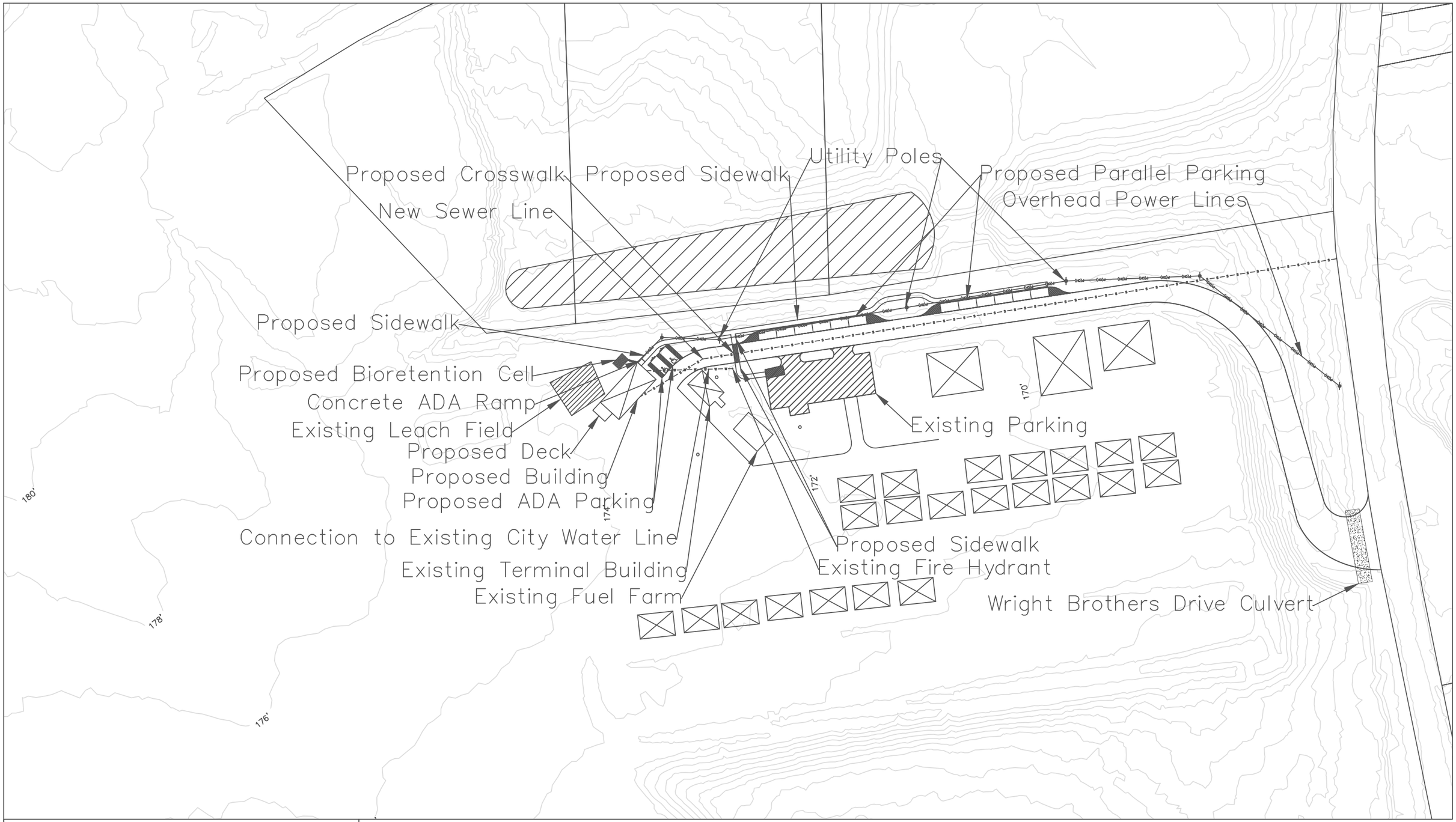
Note that each cost listed above is inclusive of a 40% markup to cover the costs of actions such as delivery, removal, and or relocation of material such as dirt, the septic tank, and the fire hydrant among other miscellaneous costs. Also note that the addition to the existing terminal cost does not include the cost for updating the old portion of the terminal.

Next Steps

From this report, the client can present our preliminary designs, costs, and concerns to the City of Belfast. This should be done to gain public and financial support for the project. Once these goals have been achieved, the client should:

1. Hire a professional engineering firm to prepare final designs, drawings, specifications, and cost estimates for the project.
    a. This should entail a geotechnical engineer conducting a subsurface investigation to determine soil properties underneath the proposed building.
2. Hire a general contractor to construct the final proposed project.

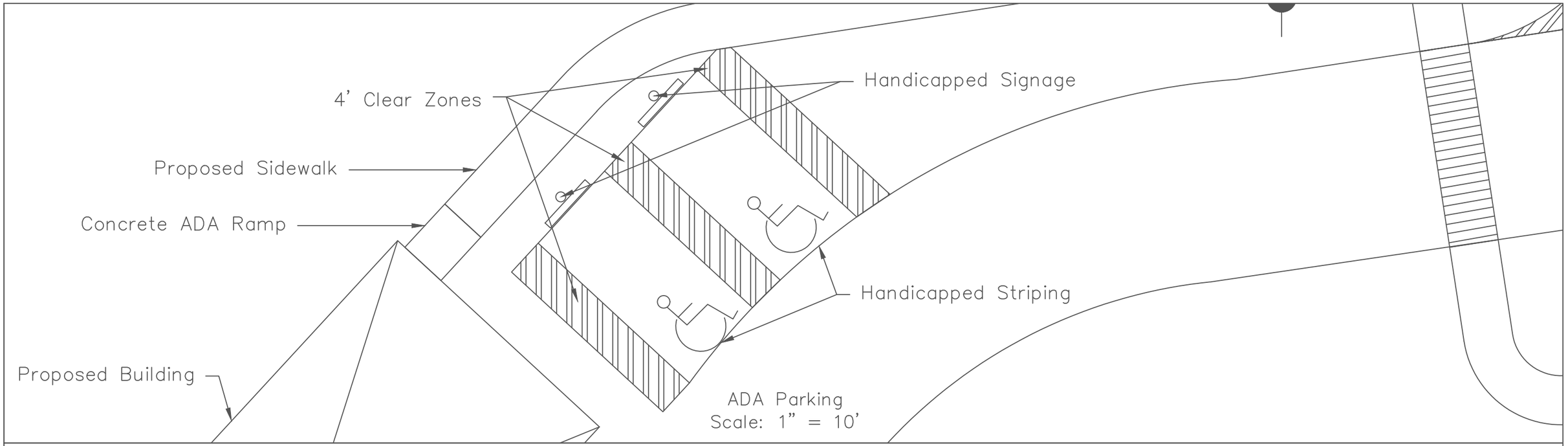
Appendix A:
Design Drawings

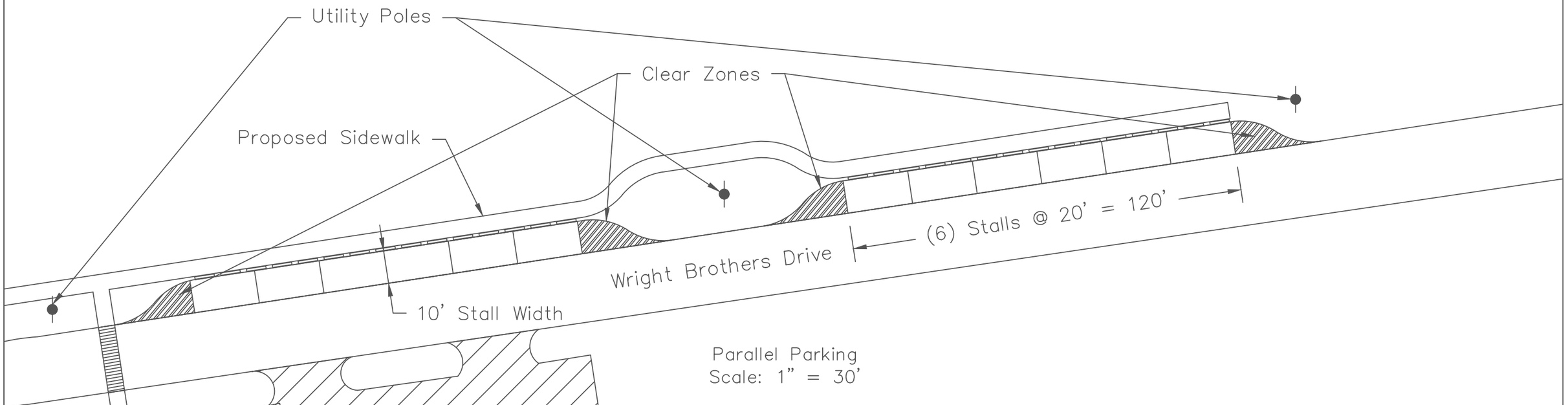


Notes:

Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: C1	N
	Designed By: ----	Designed Date: ----		
Proposed Site Layout	Drafted By: Brennan Dunton	Drafted Date: 3/20/2024	Scale: 1" = 100'	1" 1" 1"
	Checked By: Parker Harriman	Checked Date: 3/20/2024		





Notes:

1.) Handicapped parking stalls shall be 10 feet wide by 20 feet long in accordance with Town of Belfast ordinances.

2.) Sidewalk shall be at grade of parking, thus no ADA ramp will be needed to access sidewalk.

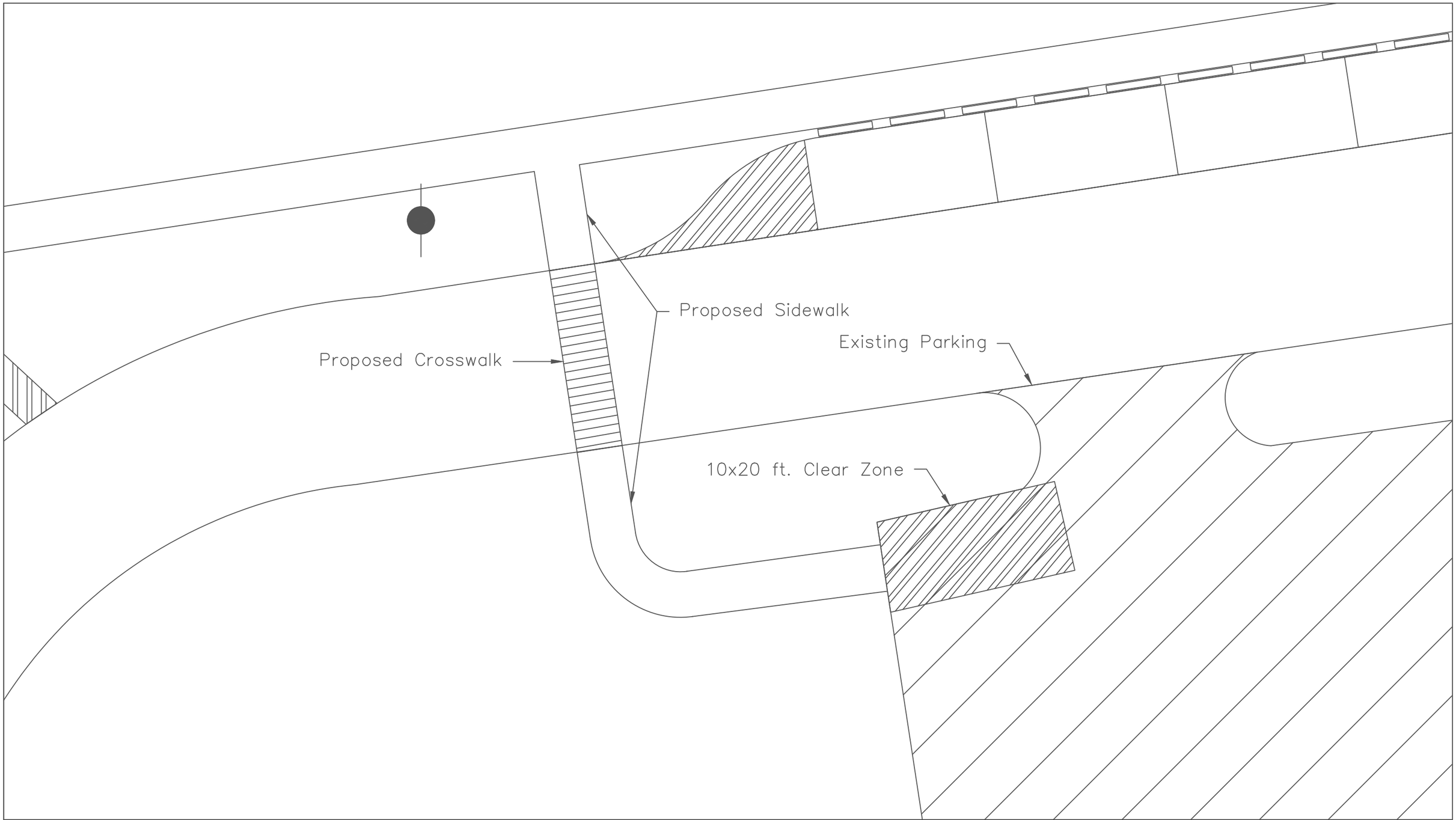
3.) Parking barriers shall be 6 feet long and 3” tall to create a barrier between all parking spaces and sidewalks.

Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: C2		
	Designed By: Alexei Hickey	Designed Date: 2/29/2024			
Parking Details	Drafted By: Brennan Dunton	Drafted Date: 3/20/2024	Scale: Varies		
	Checked By: Parker Harriman	Checked Date: 3/20/2024			

N

1” 1” 1”



Notes:

Civil Disobedience

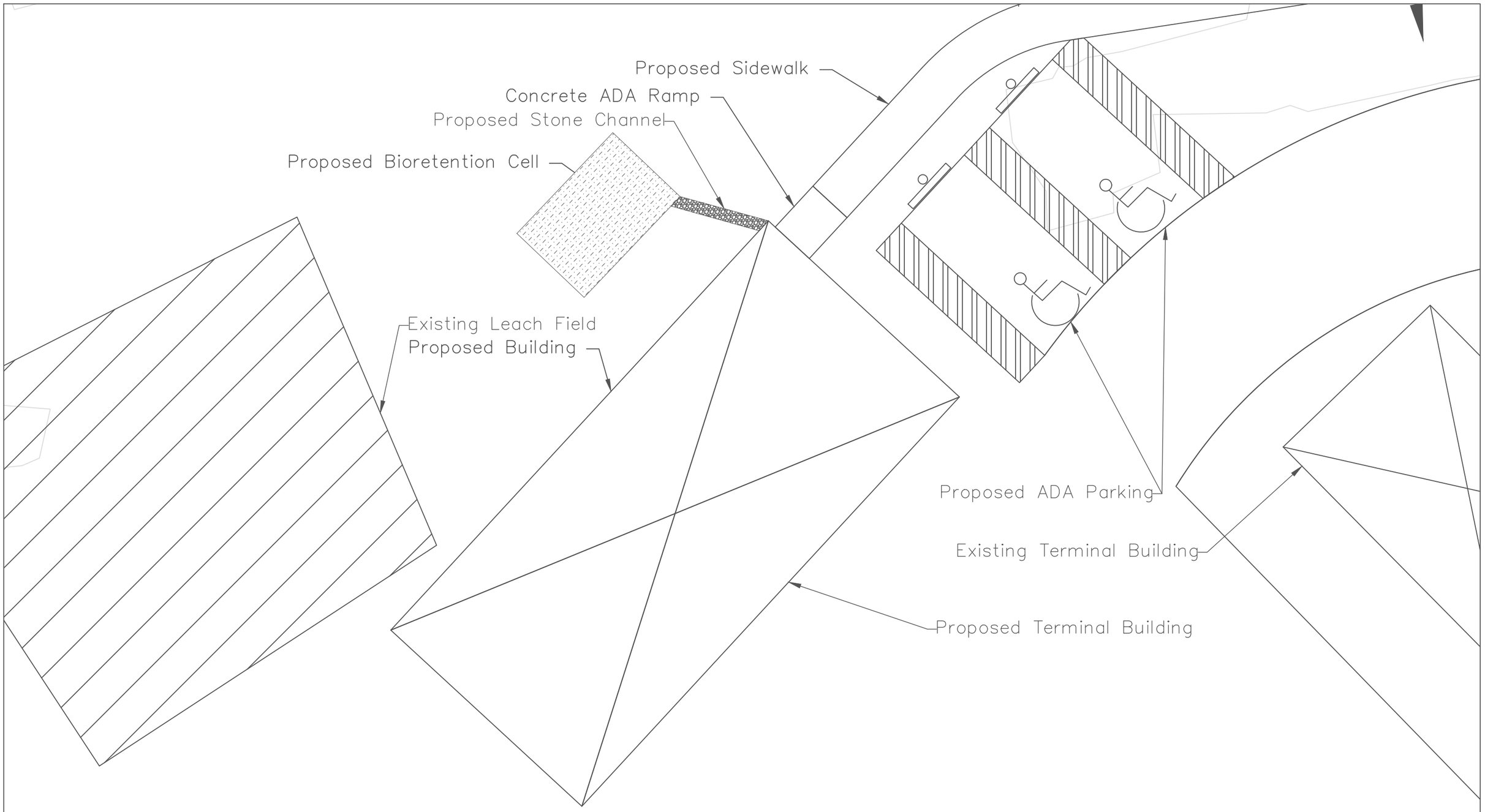
Belfast Aiport Public Terminal

Crosswalk Detail

Project Mngr.:	Brennan Dunton	Project Rep.:	Cory Morse	Pg. #:	C3
Designed By:	Alexei Hickey	Designed Date:	3/7/2024		
Drafted By:	Brennan Dunton	Drafted Date:	3/20/2024	Scale:	1" = 10'
Checked By:	Parker Harriman	Checked Date:	3/20/2024		

N

1/4" 1/2" 1"



Notes:

Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: C4	N	
	Designed By: Brennan Dunton	Designed Date: 2/22/2024			
Rain Garden Plan View	Drafted By: Brennan Dunton	Drafted Date: 3/20/2024	Scale: 1" = 10'	1" 1" 1"	
	Checked By: Parker Harriman	Checked Date: 3/20/2024			

CROSS SECTION

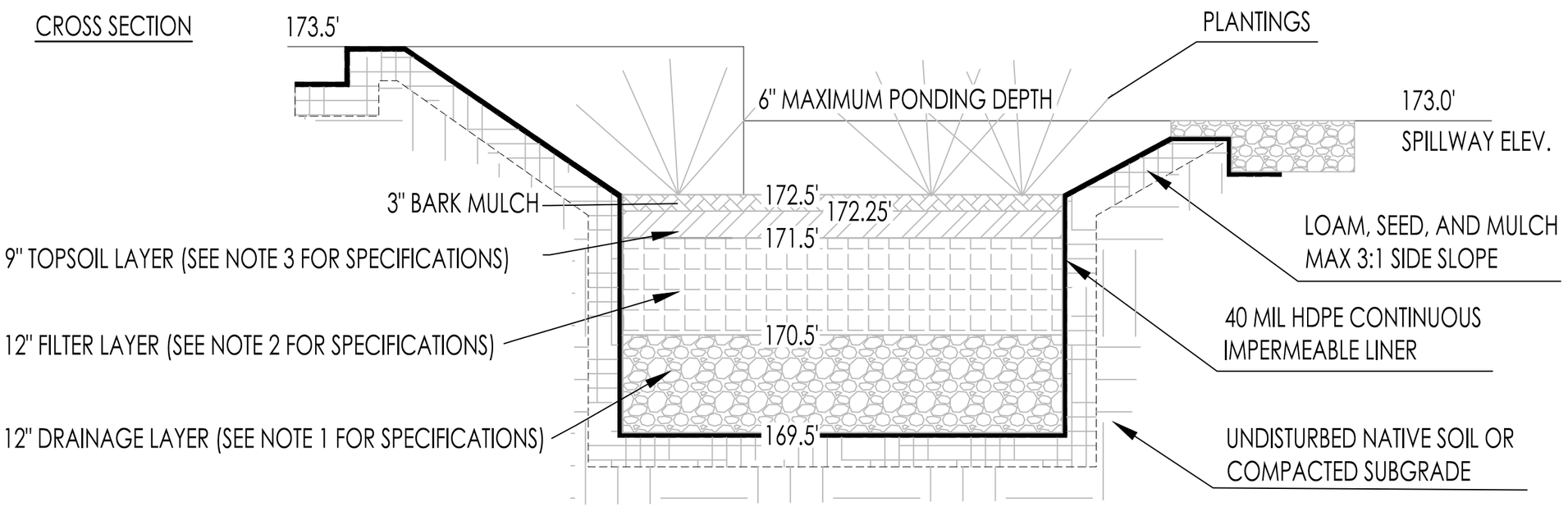


TABLE 1

MAINE DOT TYPE B BACKFILL SPECIFICATIONS (MEDOT #703.22)

SIEVE #	% PASSING BY WEIGHT
1"	95-100
1/2"	75-100
NO. 4	50-100
NO. 20	15-80
NO. 50	0-15
NO. 200	0-5.0

TABLE 2

LOAMY COARSE SAND SPECIFICATIONS

SIEVE #	% PASSING BY WEIGHT
NO. 10	85-100
NO. 20	70-100
NO. 60	15-40
NO. 200	8-15
CLAY (HYDROMETER TEST)	< 2

NOTES

1. DRAINAGE LAYER: A 12" LAYER OF WELL-GRADED, CLEAN, COARSE GRAVEL MEETING THE MDOT SPECIFICATION 703.22 FOR TYPE B BACKFILL (SEE TABLE 1).

2. FILTER LAYER: A 12" LAYER OF LOAMY COARSE SAND WHICH IS LOOSELY INSTALLED AND MEETS THE GRAIN SIZE SPECIFICATIONS IN TABLE 2.

3. TOPSOIL LAYER: A 6" LAYER OF NON-CLAYEY, LOAMY TOPSOIL SUCH AS USDA LOAMY SAND TOPSOIL WITH 5-8% HUMIFIED ORGANIC CONTENT. TOPSOIL FROM THE DEVELOPMENT SITE MAY BE APPROPRIATE BUT SHOULD BE TESTED FOR ORGANIC CONTENT AND CLAY CONTENT (HYDROMETER TEST OF <5%). THE SOIL MUST BE SCREENED, LOOSE, FRIABLE, AND SHALL BE FREE FROM ADMIXTURES OF SUBSOIL, REFUSE, STONES (GREATER THAN 2" IN DIAMETER), CLUMPS, ROOTS AND OTHER UNDESIREABLE FOREIGN MATTER. THE TOPSOIL SHOULD BE GENTLY MIXED WITHIN THE FILTER LAYER TO PROVIDE CONTINUITY FOR DEEP ROOT PENETRATION. THE TEETH OF A BACKHOE, A HAND RAKE, A SHOVEL, OR ROTOTILLING 2-3" MAY BE USED TO CREATE A LOOSENED TRANSITION.

4. FILTER SURFACE PLANTINGS: THE SOIL FILTER SURFACE SHOULD BE PLANTED WITH PLANTS THAT ARE TOLERANT OF WELL DRAINED SOILS AND FREQUENT INUNDATION. NATIVE PLANTS SHOULD BE CHOSEN FOR THEIR TOLERANCE TO URBAN RUNOFF, MOISTURE FLUCTUATION, POLLUTANT LOADING, LIGHT AMOUNT, TEMPERATURE AND PH. BASED UPON THE EXPECTED FULL GROWN SIZE OF THE PLANT, THE PLANTS' SPACING SHOULD BE NO MORE THAN 18 INCHES TO 3 FEET ON CENTER. A LANDSCAPE DESIGNER OR ARCHITECT SHOULD BE INVOLVED TO SELECT THE APPROPRIATE PLANTS FOR SITE CONDITIONS. BEWARE OF INVASIVES. FULL PLANT COVER SHOULD BE ACHIEVED WITHIN THE FIRST YEAR FROM CONSTRUCTION.

5. ORIGINAL DETAIL ACQUIRED FROM STILLWATER ENVIRONMENTAL ENGINEERING AND MODIFIED TO SUIT OUR NEEDS. PLEASE REFERENCE THE SECTION ON BIORETENTION CELLS IN THE MAINE DEP STORMWATER BMP DESIGN MANUAL FOR MORE INFORMATION.

Notes:

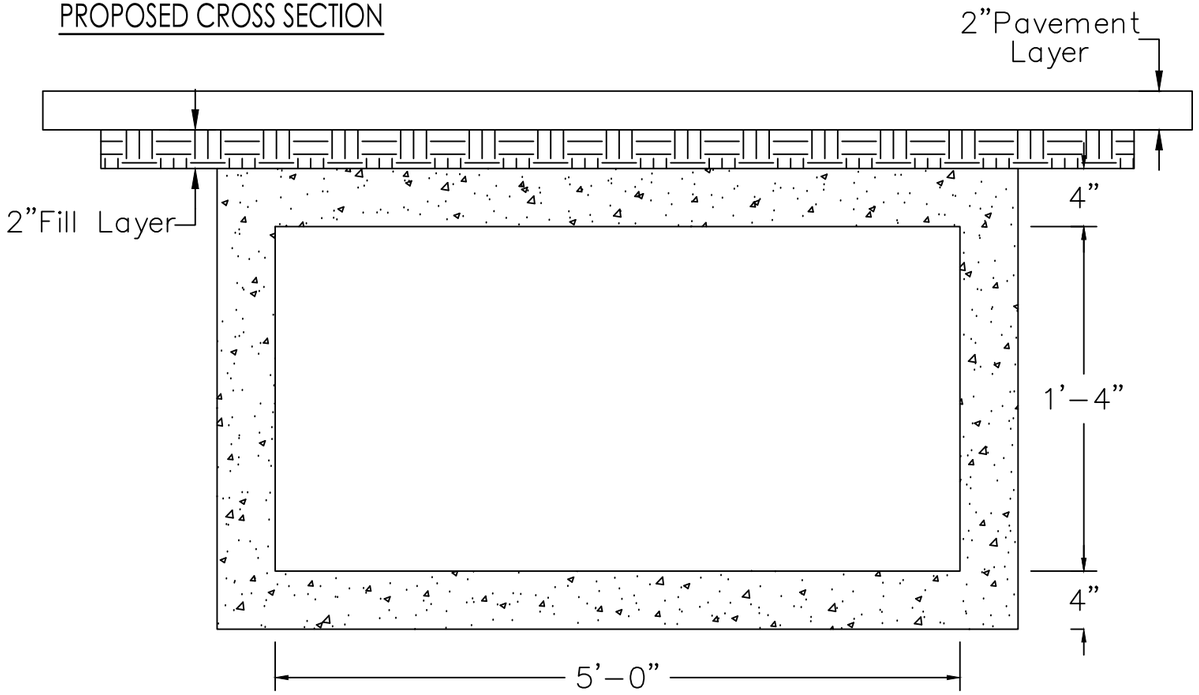
Civil Disobedience

Belfast Aiport Public Terminal

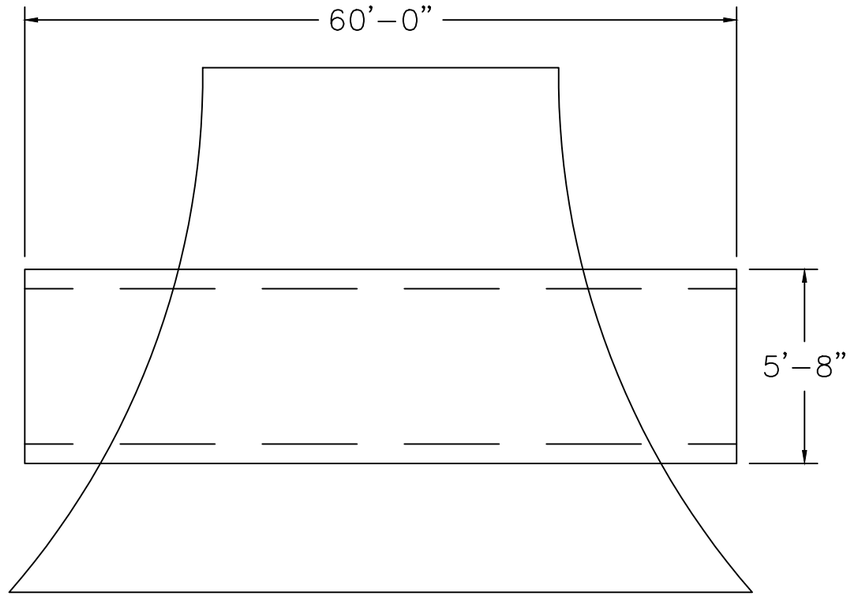
Rain Garden Detail

Project Mngr.:	Brennan Dunton	Project Rep.:	Cory Morse	Pg. #:	C5
Designed By:	----	Designed Date:	----		
Drafted By:	Brennan Dunton	Drafted Date:	3/20/2024	Scale:	NTS
Checked By:	Parker Harriman	Checked Date:	3/20/2024		

PROPOSED CROSS SECTION



PLAN VIEW



DRIVEWAY APRON

NOTES

1. The shown bottom length of the culvert corresponds to the recommended bottom length for a 25-yr storm discharge.

2. The culvert shall be made of concrete.

3. The fill and pavement layers shown resting on the culvert are approximations based on elevation data.

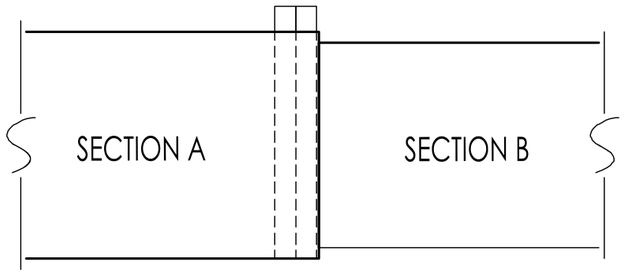
4. 4"-thickness is based on the existing structure. No exploration was done on how increasing the bottom width would effect the structural capacity of the culvert with its current thickness.

Notes:

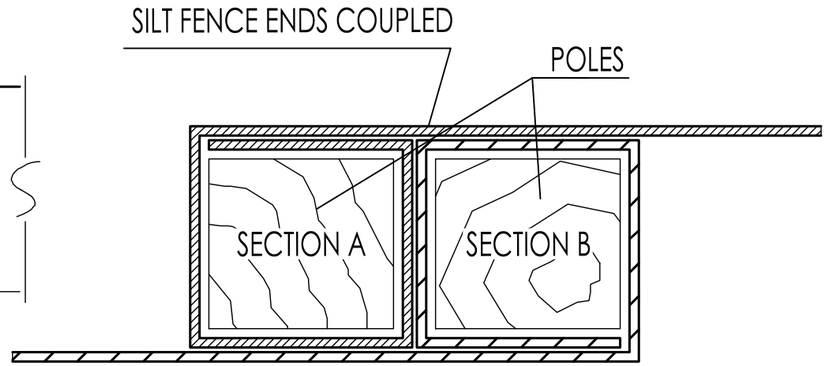
Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: C6	
	Designed By: Brennan Dunton	Designed Date: 2/22/2024		
Culvert Detail	Drafted By: Brennan Dunton	Drafted Date: 3/20/2024	Scale: NTS	
	Checked By: Parker Harriman	Checked Date: 3/20/2024		

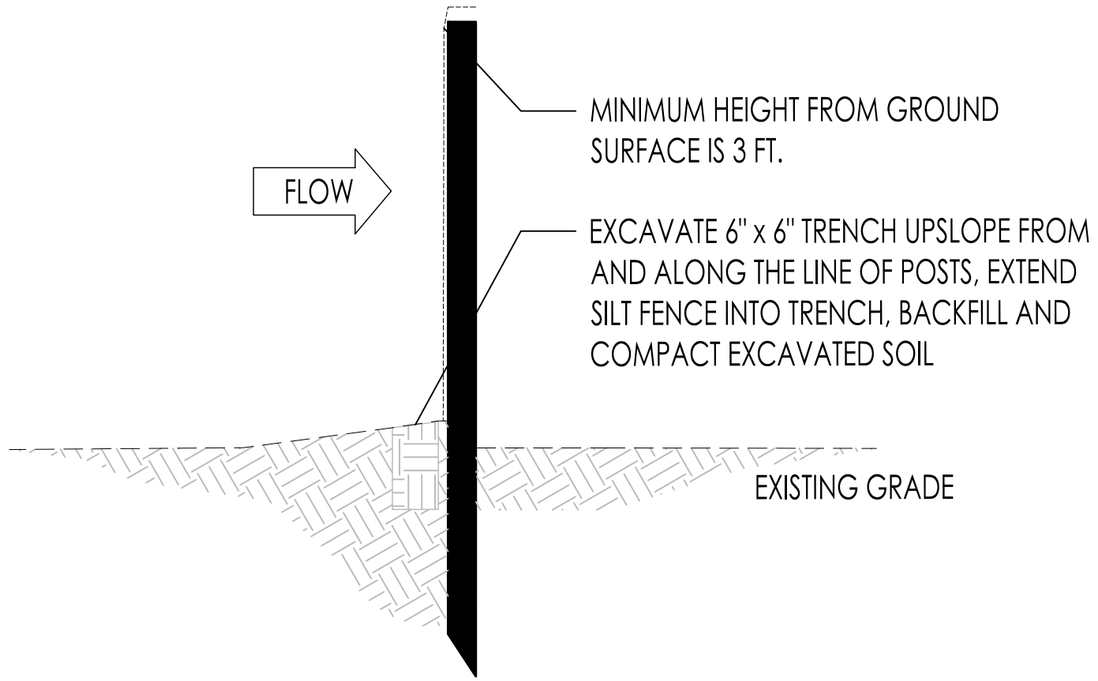
PROFLIE VIEW



PLAN VIEW



CROSS SECTION



NOTES

- CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS, ALONG WITH BELOW FENCE-END JOINING INSTALLATION INSTRUCTIONS.
- FENCE AND ALL COMPONENTS SHALL BE BIODEGRADABLE, AND SHALL BE REMOVED ONCE THE SITE IS PERMANENTLY STABILIZED.

FENCE-END JOINING INSTALLATION INSTRUCTIONS

- PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
- ROTATE BOTH POSTS AT LEASTE 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
- DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

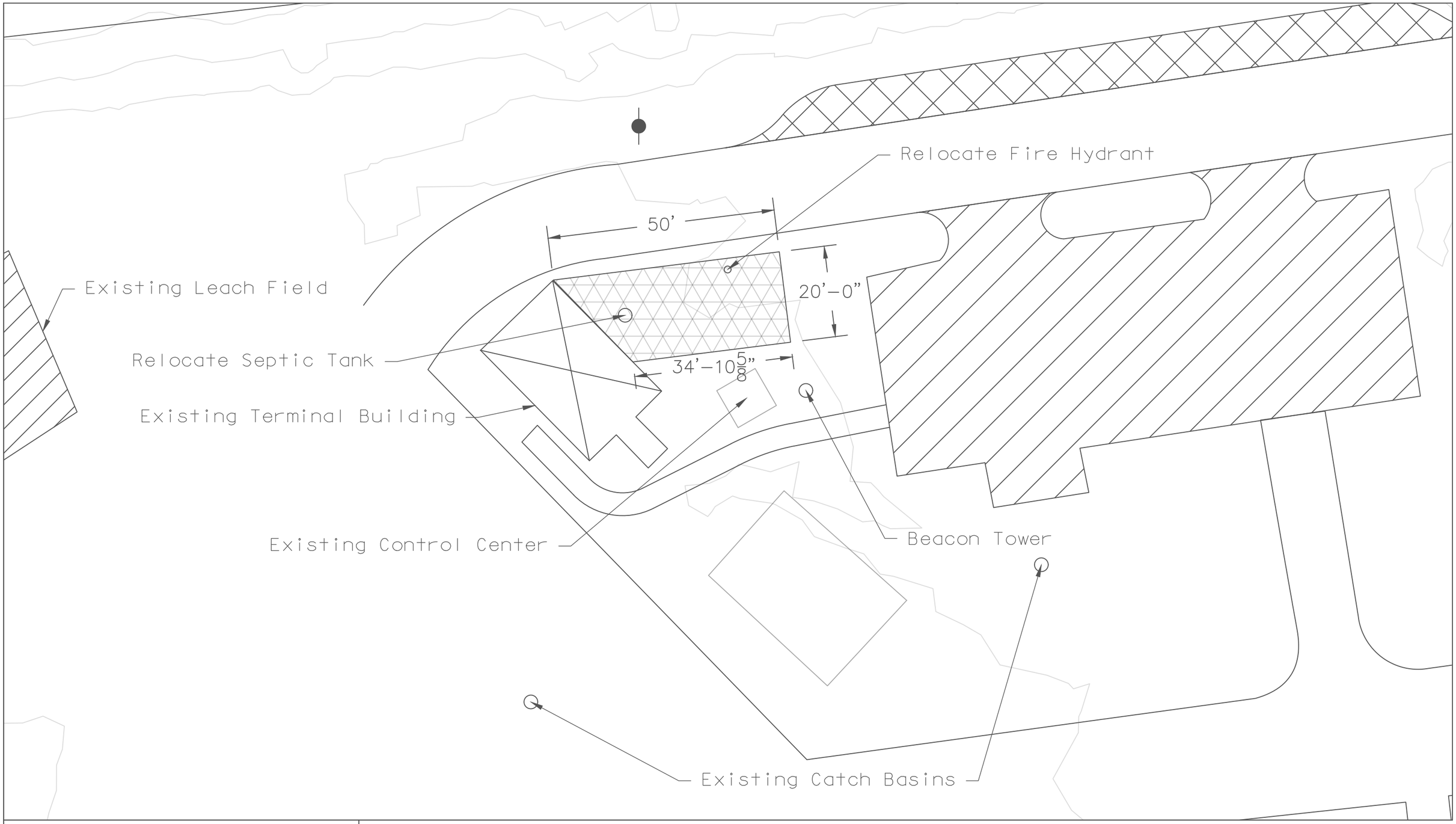
MAINTENANCE:

- SILT FENCES SHALL BE INSEPCTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAIN EVENTS. REPAIRS SHALL BE MADE IMMEDIATELY.
- IF THE FABRIC OF THE SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
- SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOUDL BE REMOVED WHEN THE DEPOSITS HAVE REACHED APPROXIMATELY 1/2 THE HEIGHT OF THE BARRIER.
- SEDIMENT DEPOSITS THAT ARE REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

Notes:

Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: C7		
	Designed By: ----	Designed Date: ----			
Silt Fence Detail	Drafted By: Brennan Dunton	Drafted Date: 3/20/2024	Scale: NTS		
	Checked By: Parker Harriman	Checked Date: 3/20/2024			



Notes:

1.) Handicapped parking stalls shall be 10 feet wide by 20 feet long in accordance with Town of Belfast ordinances.

2.) Sidewalk shall be at grade of parking, thus no ADA ramp will be needed to access sidewalk.

3.) Parking barriers shall be 6 feet long and 3" tall to create a barrier between all parking spaces and sidewalks.

Civil Disobedience

Belfast Aiport Public Terminal

Building Addition Plan

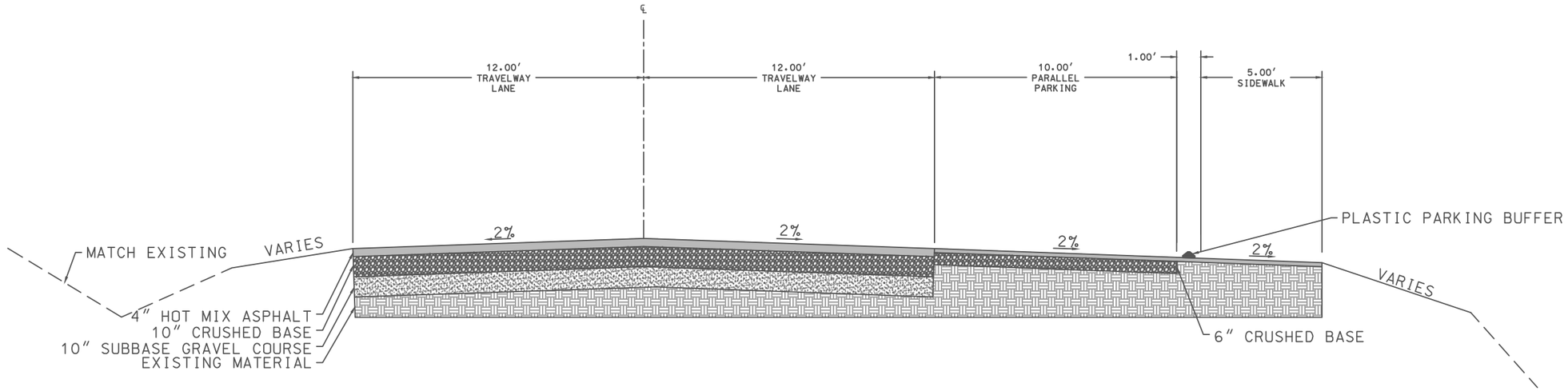
Project Mngr.:	Brennan Dunton	Project Rep.:	Cory Morse
Designed By:	----	Designed Date:	----
Drafted By:	Parker Harriman	Drafted Date:	3/21/2024
Checked By:	Brennan Dunton	Checked Date:	3/21/2024

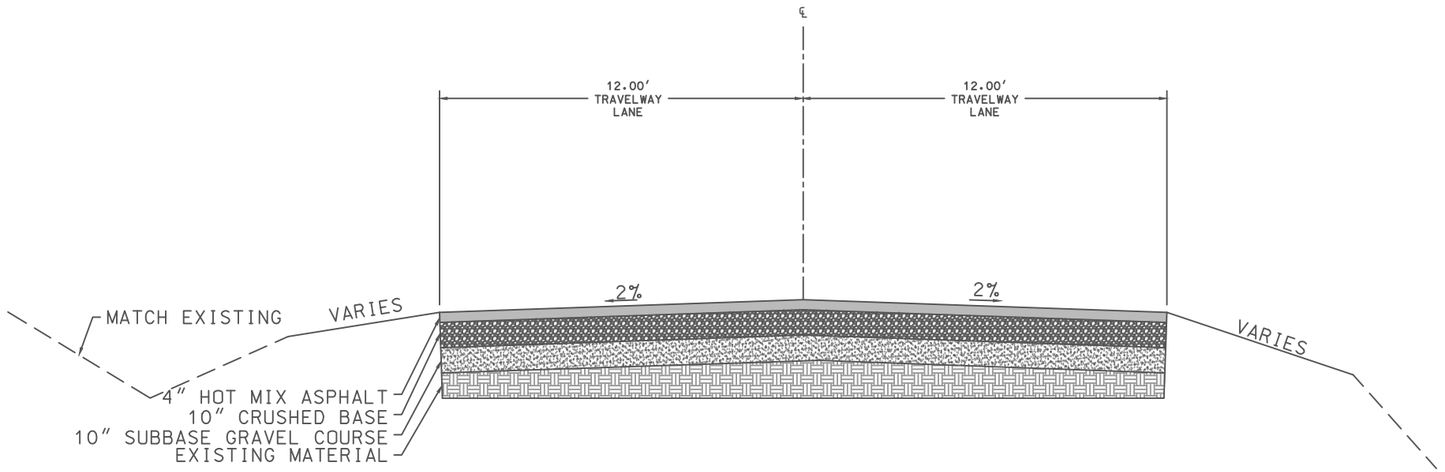
Pg. #: C8

Scale: 1" = 20'-0"

N

1/4" 1/2" 1"





Notes:

Civil Disobedience

Belfast Aiport Public Terminal

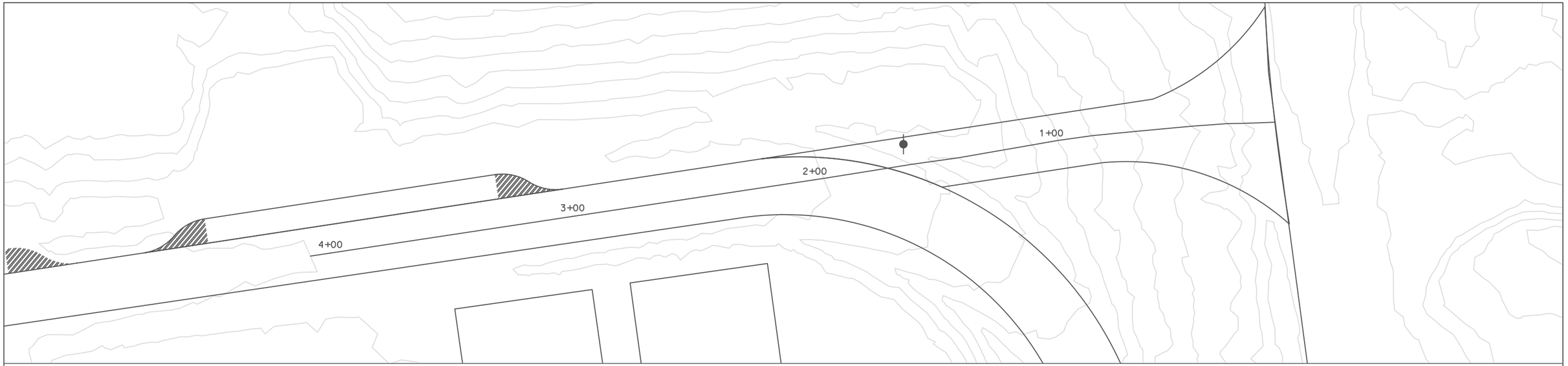
Roadway Realignment Plan and Profile

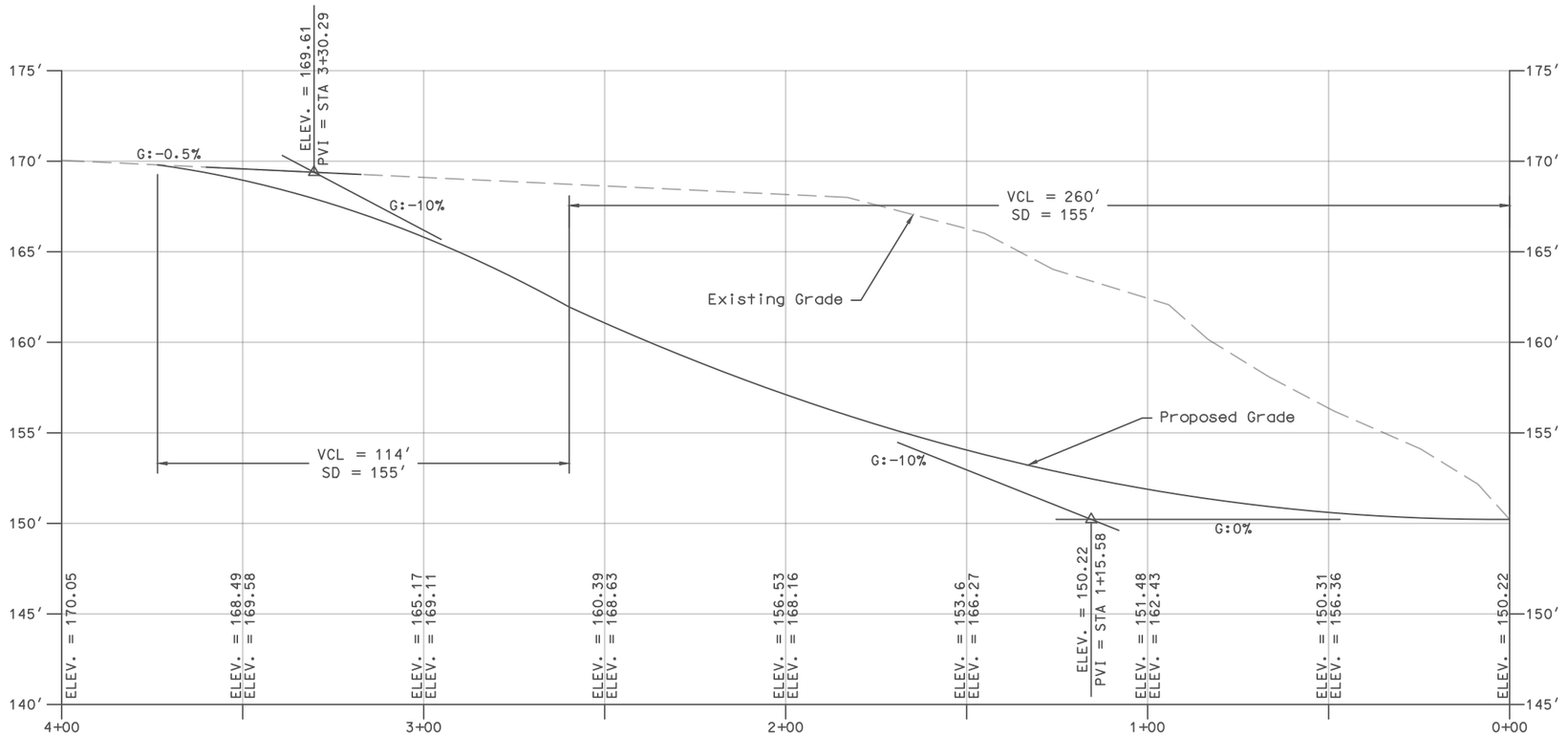
Project Mngr.:	Brennan Dunton	Project Rep.:	Cory Morse
Designed By:	Alexei Hickey	Designed Date:	3/4/2024
Drafted By:	Travis Smith	Drafted Date:	3/5/2024
Checked By:	Brennan Dunton	Checked Date:	3/21/2024

Pg. #: C9

Scale: 1″ = 5′-0″

1/2″ 1″ 1″





Notes:

Civil Disobedience

Belfast Aiport Public Terminal

Roadway Realignment Plan and Profile

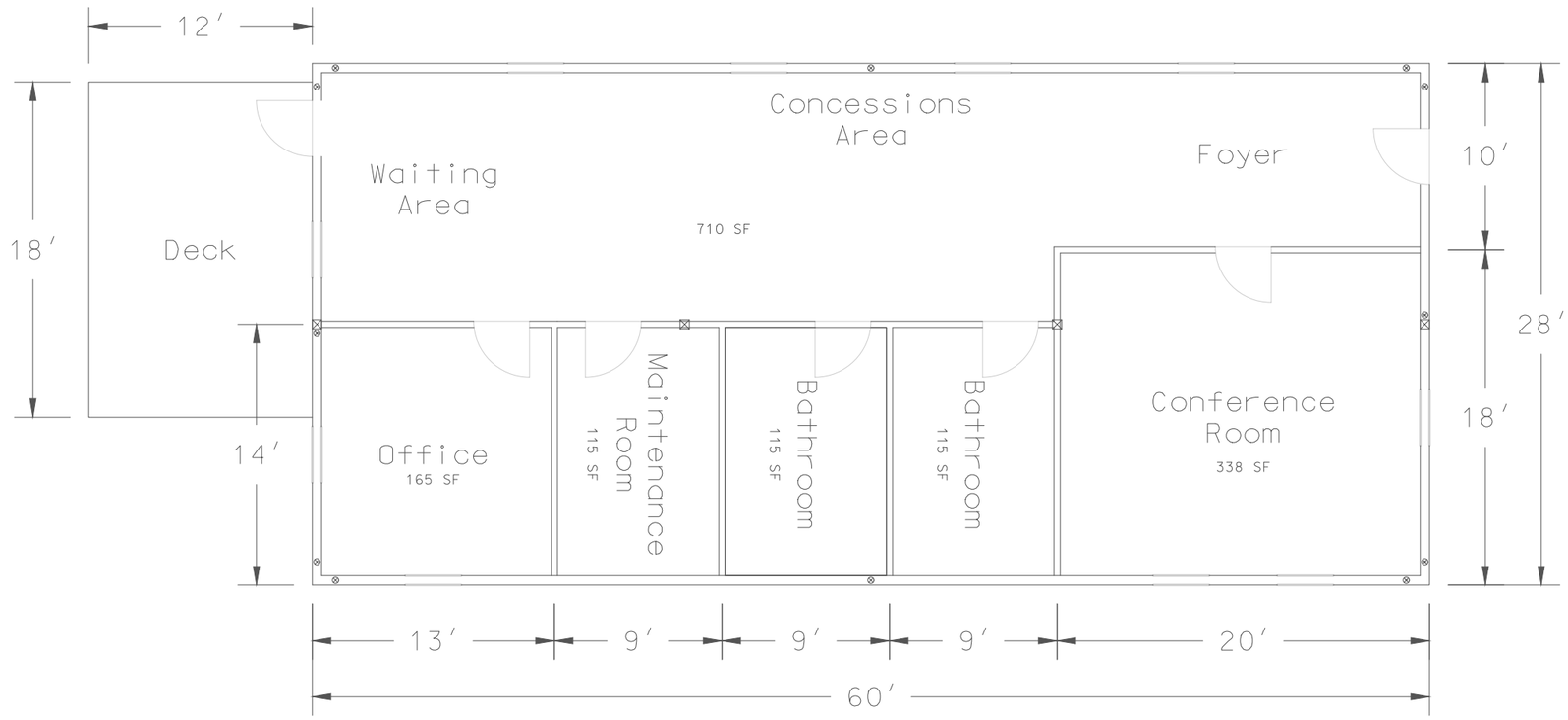
Project Mngr.:	Brennan Dunton	Project Rep.:	Cory Morse
Designed By:	Alexei Hickey	Designed Date:	3/4/2024
Drafted By:	Alexei Hickey	Drafted Date:	3/21/2024
Checked By:	Brennan Dunton	Checked Date:	3/21/2024

Pg. #: C10

Scale: 1″ = 40′-0″

N

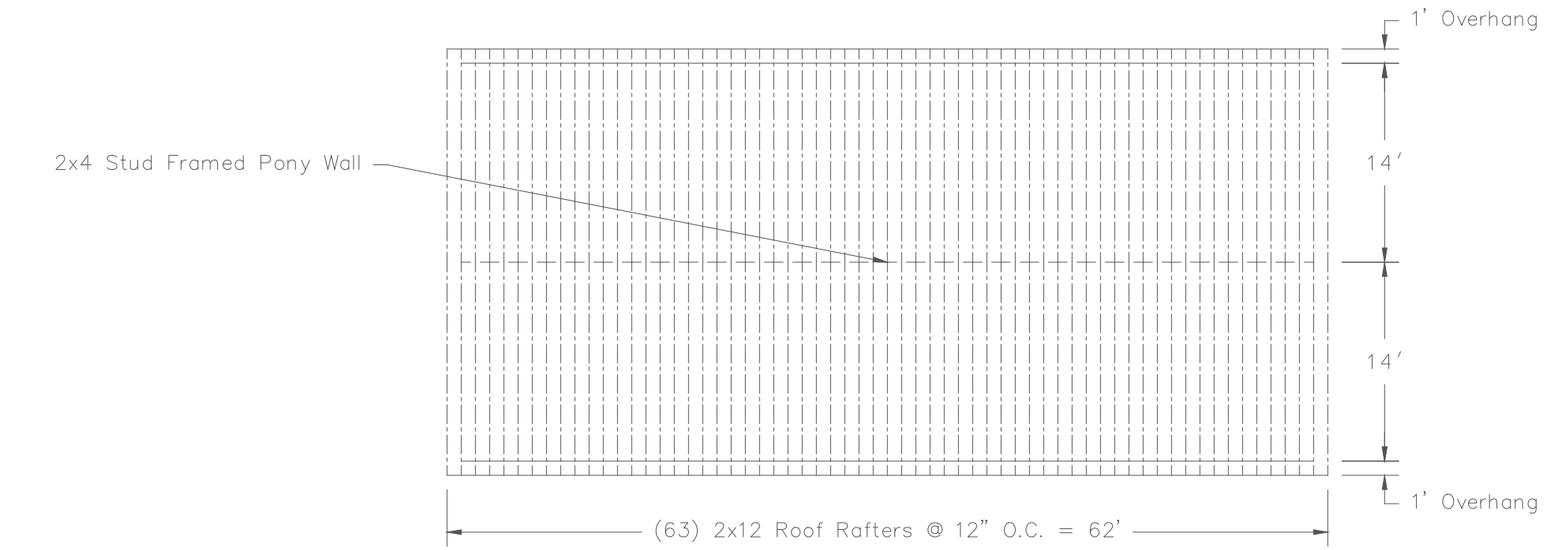
1″ 1/2″ 1″



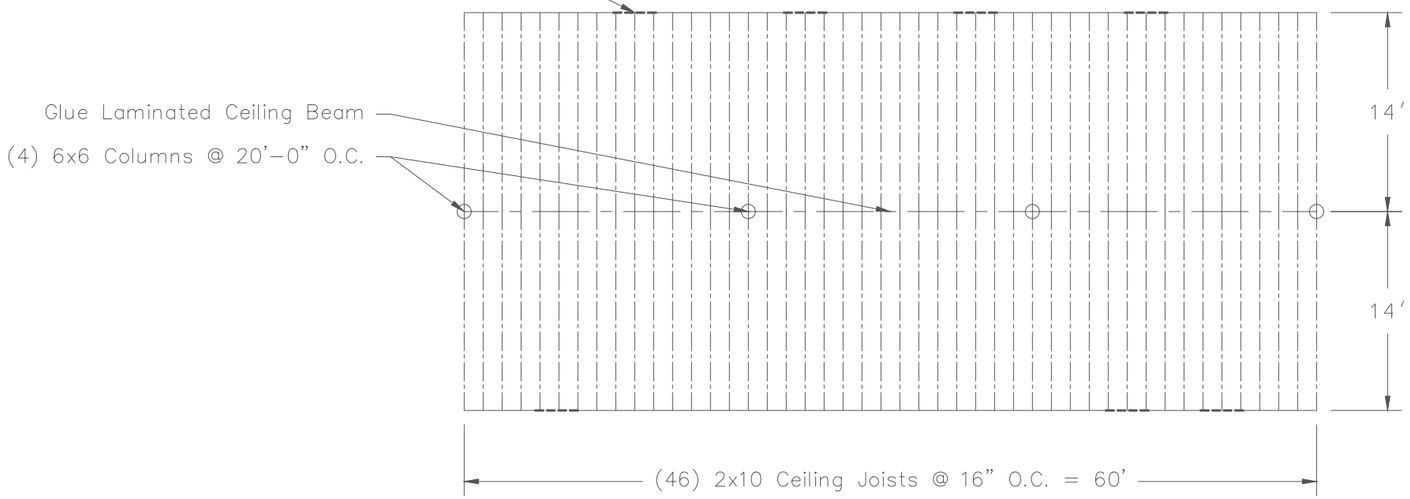
Notes:

Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S1	
	Designed By: Parker Harriman	Designed Date: 4/19/2024		
Floor Plan	Drafted By: Parker Harriman	Drafted Date: 4/19/2024	Scale: 1/8″ = 1′-0″	
	Checked By: Brennan Dunton	Checked Date: 4/19/2024		



Roof Framing Plan



Ceiling Framing Plan

Notes:
1. Roof rafters shall be Grade 1 Eastern White Pine.
2. Ceiling joists shall be Grade 1 Eastern White Pine.
3. Glue laminated ceiling beam shall be 5-1/8"x25" 24F-V4 Douglas Fir/Douglas Fir.
4. Columns shall be Grade 1 Spruce/Pine/Fir.
5. Headers over doors and windows shall be back-to-back Grade 2 Spruce/Pine/Fir.
6, Ridge Plate shall be Grade 1 Eastern White Pine.
7. Pony wall lumber shall be stud grade Spruce/Pine/Fir.
8. Exterior framed wall lumber shall be stud grade Spruce/Pine/Fir.

Notes:
1.

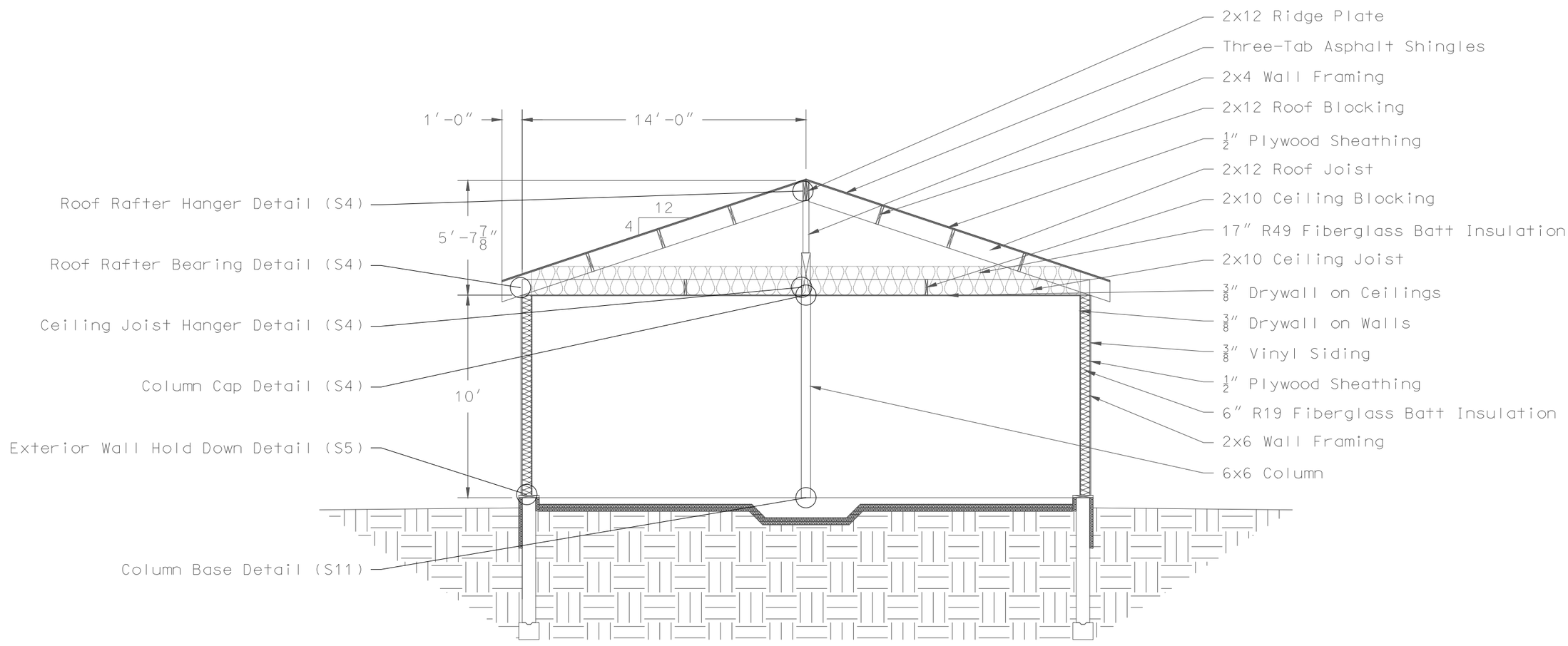
Civil Disobedience

Belfast Aiport Public Terminal

Framing Plans

Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S2	
Designed By: Devin Freeman	Designed Date: 4/3/2024		
Drafted By: Parker Harriman	Drafted Date: 4/19/2024	Scale: 3/32" = 1'-0"	
Checked By: Brennan Dunton	Checked Date: 4/19/2024		

1/4" 1/2" 1"



Notes:

1. Foundation insulation shown for imagery purposes only. Actual insulation to be designed by others.

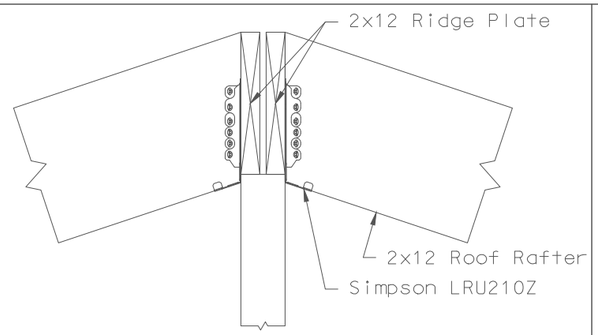
2. Structural connections not shown for clarity. See sheet S4 and S5 for connection details.

Civil Disobedience

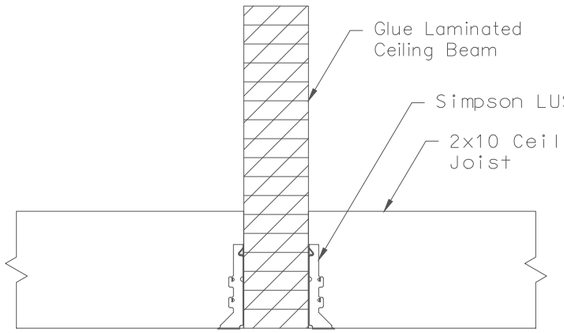
Belfast Aiport Public Terminal

Structure Section

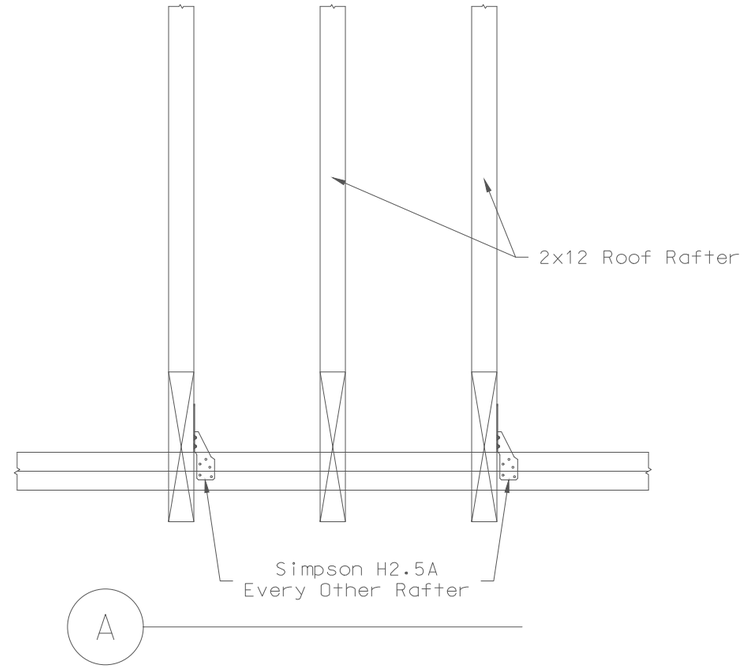
Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S3	
Designed By: Devin Freeman	Designed Date: 4/3/2024		
Drafted By: Parker Harriman	Drafted Date: 4/19/2024	Scale: 3/16″ = 1′-0″	1/4″ 1/2″ 1″
Checked By: Brennan Dunton	Checked Date: 4/19/2024		



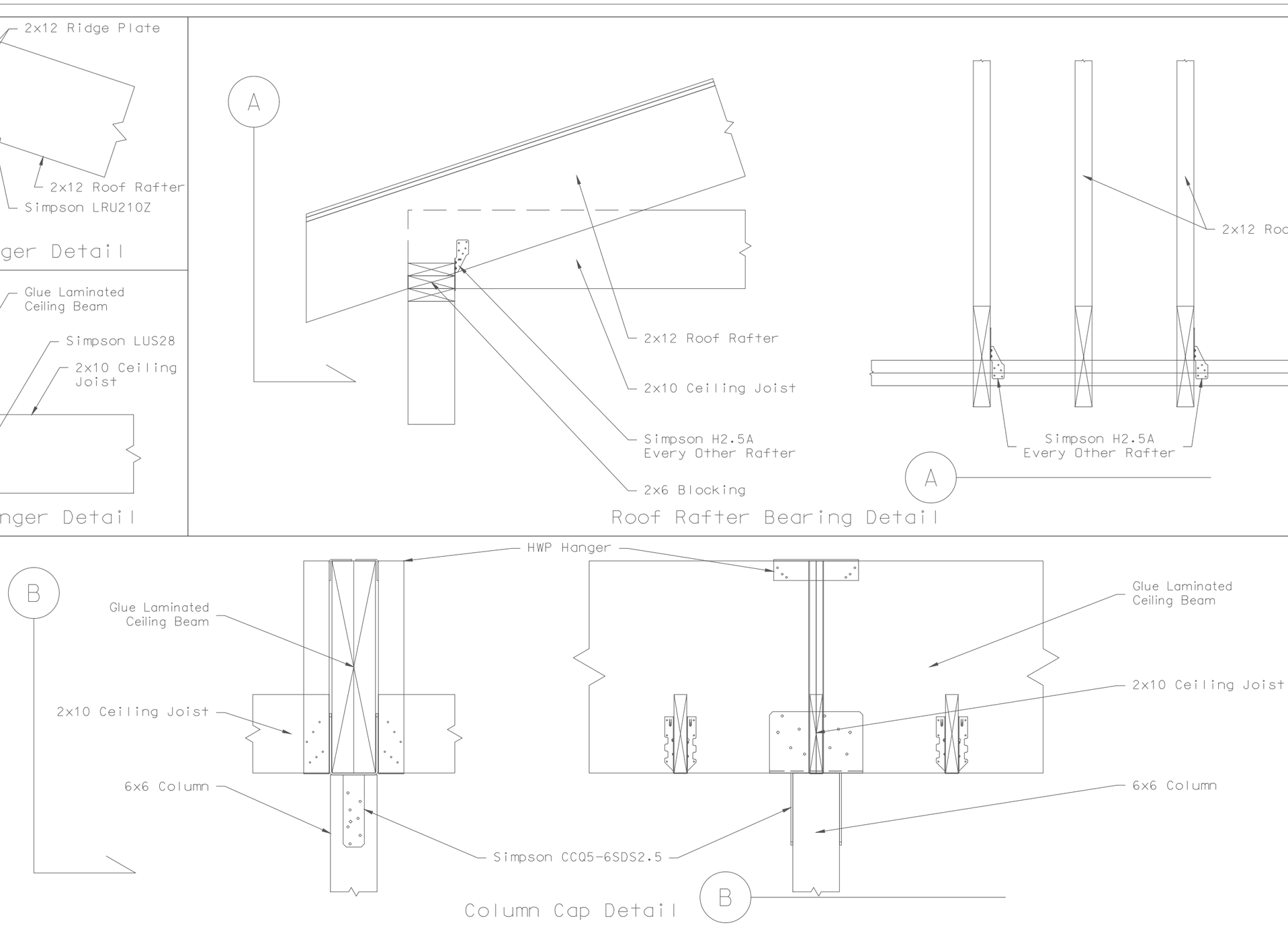
Roof Rafter Hanger Detail



Ceiling Joist Hanger Detail



Roof Rafter Bearing Detail



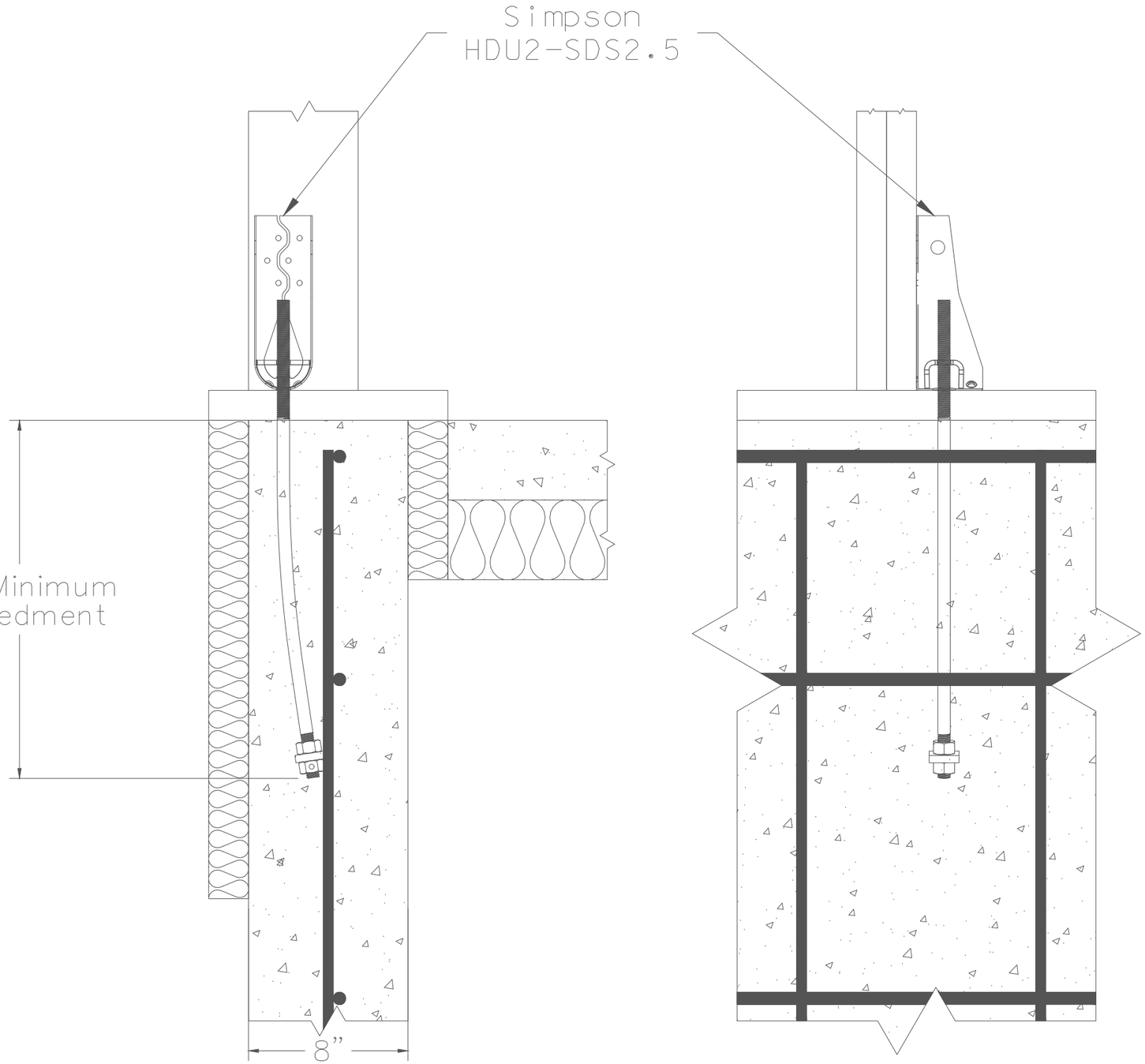
Column Cap Detail

Notes:

1.) All connections shall be installed per manufacturer's requirements.

Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S4
	Designed By: Parker Harriman	Designed Date: 4/5/2024	
Connection Details	Drafted By: Parker Harriman	Drafted Date: 4/19/2024	Scale: 1" = 1'-0"
	Checked By: Brennan Dunton	Checked Date: 4/19/2024	



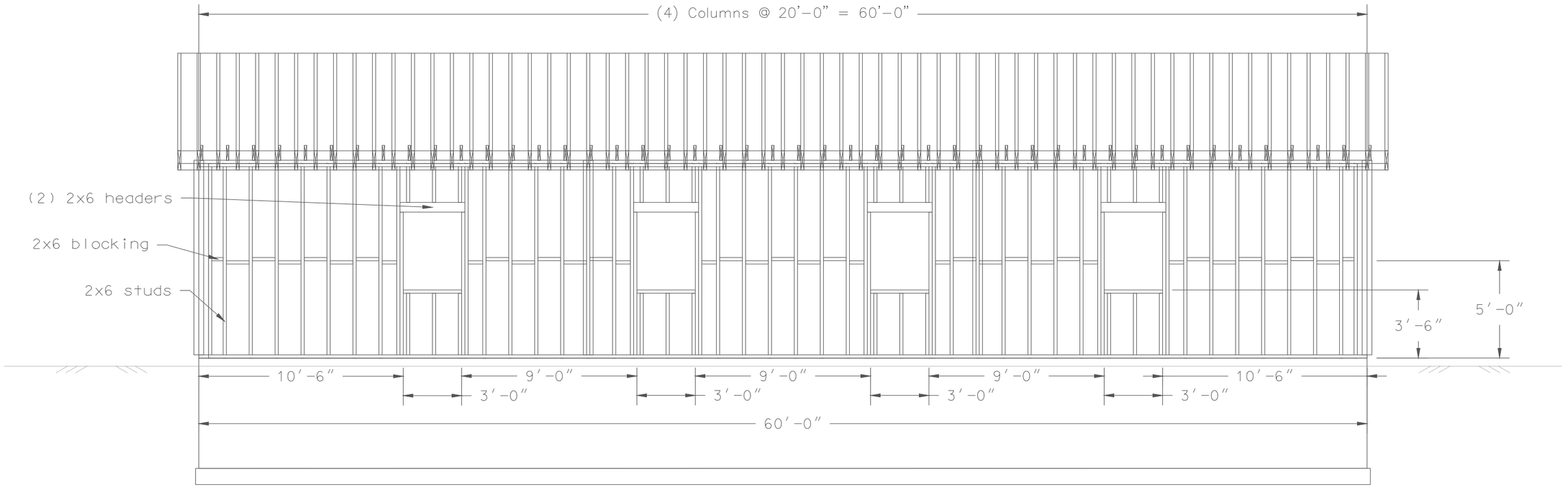
Notes:

1.) All connections shall be installed per manufacturer's requirements.

2.) Anchor bolts shall be a Simpson SB5/8X24.

Civil Disobedience

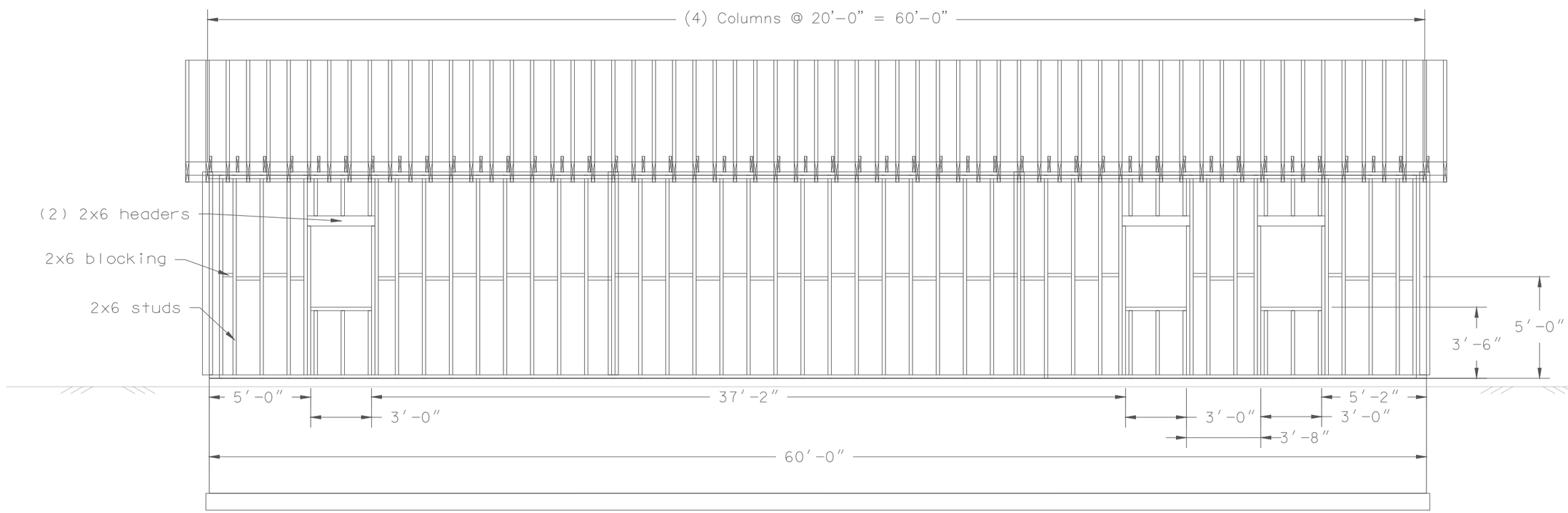
Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S5
	Designed By: Parker Harriman	Designed Date: 4/5/2024	
Exterior Wall Hold Down Detail	Drafted By: Parker Harriman	Drafted Date: 4/19/2024	Scale: 1/2" = 1'-0"
	Checked By: Brennan Dunton	Checked Date: 4/19/2024	



Notes:

Civil Disobedience

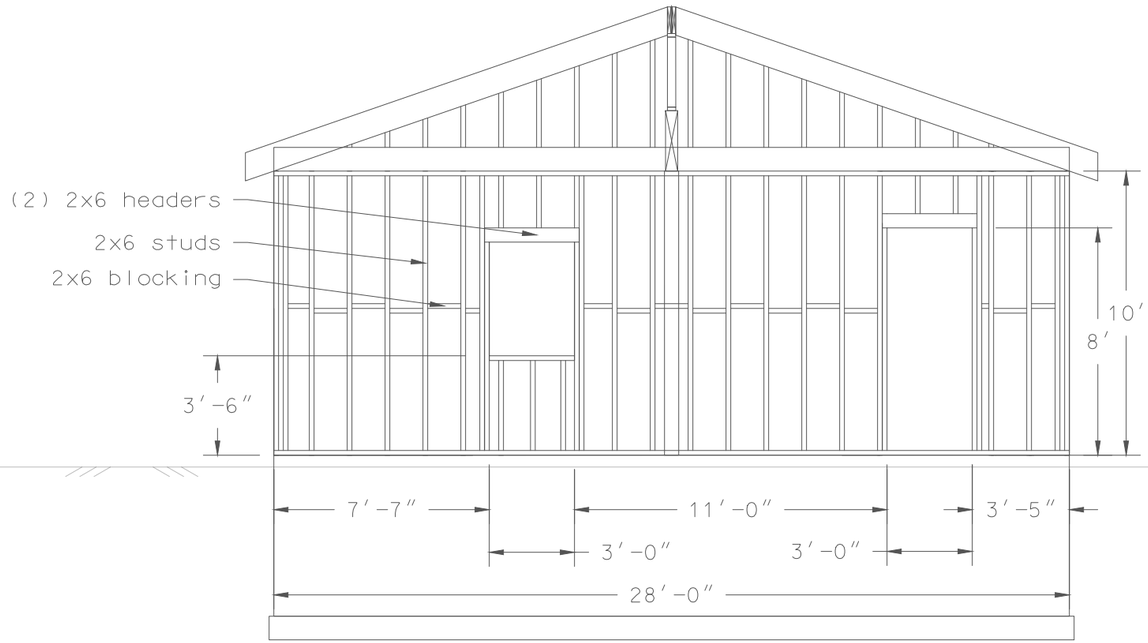
Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S6	
	Designed By: Devin Freeman	Designed Date: 3/12/2024		
NW Section	Drafted By: Brennan Dunton	Drafted Date: 4/19/2024	Scale: 3/16" = 1'-0"	1/4" 1/2" 1"
	Checked By: Parker Harriman	Checked Date: 4/19/2024		

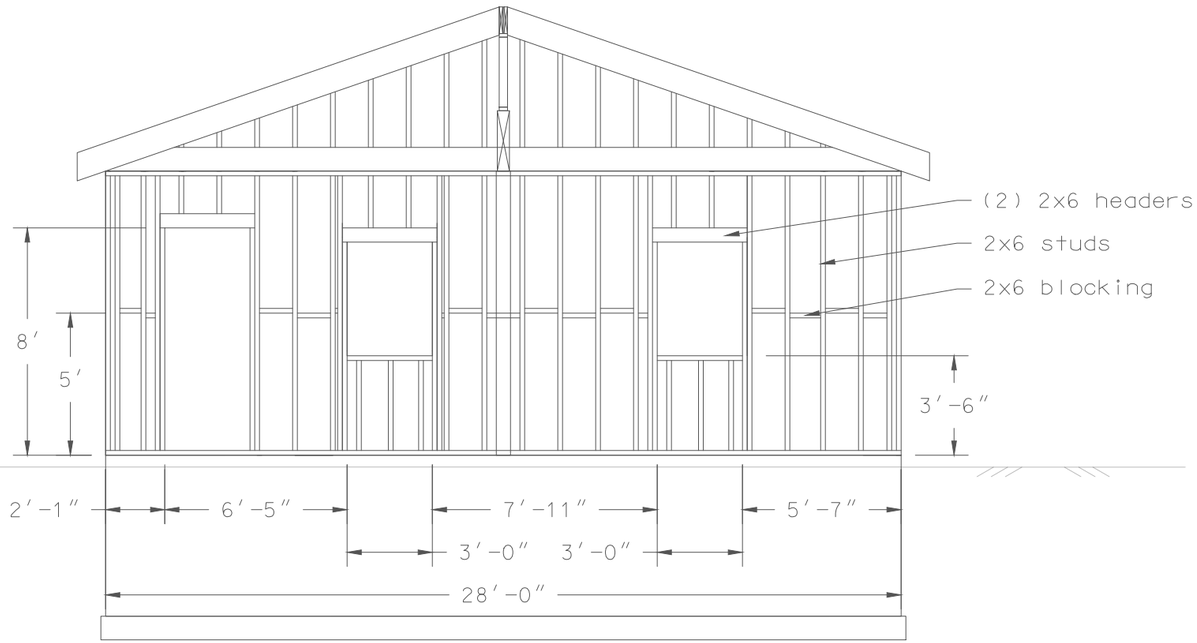


Notes:

Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S7	
	Designed By: Devin Freeman	Designed Date: 3/12/2024		
SE Section	Drafted By: Brennan Dunton	Drafted Date: 4/19/2024	Scale: 3/16" = 1'-0"	1/4" 1/2" 1"
	Checked By: Parker Harriman	Checked Date: 4/19/2024		





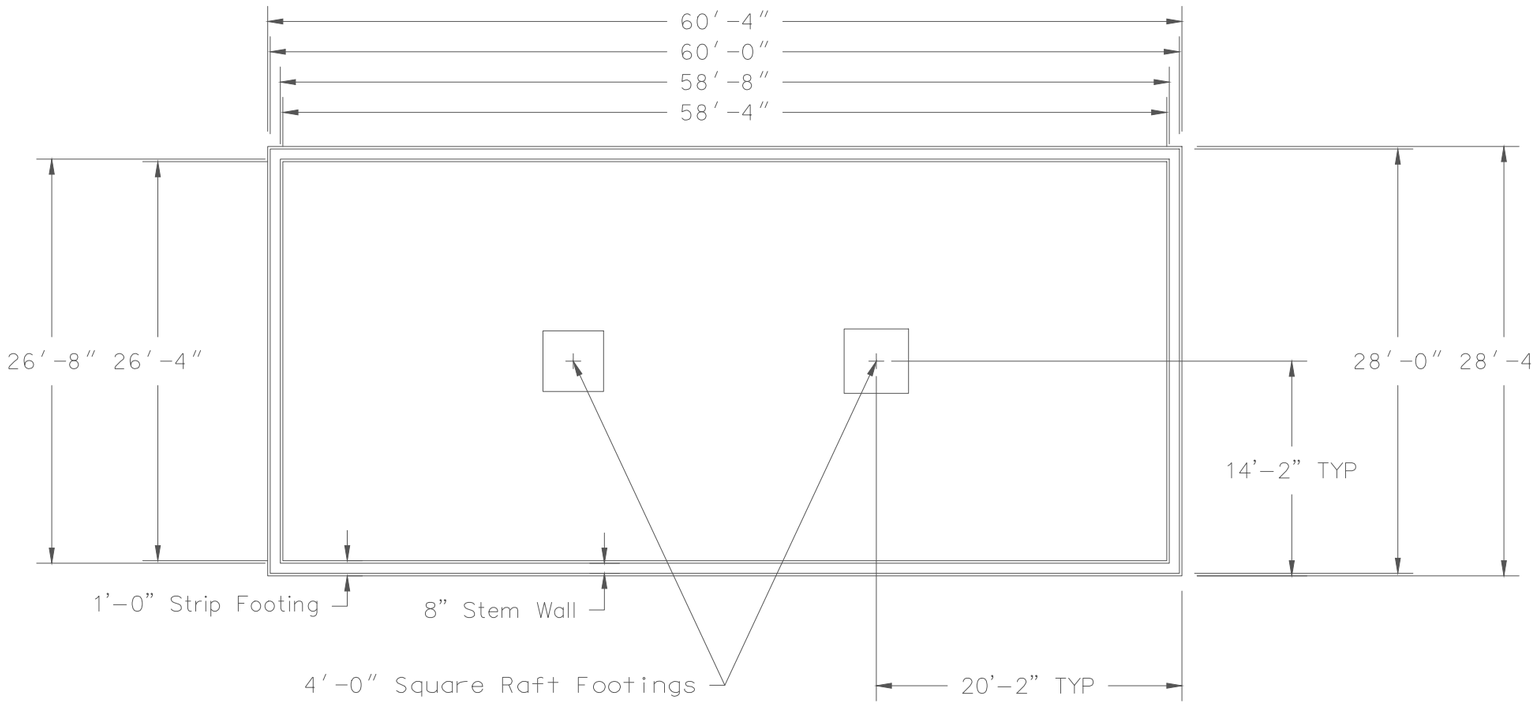
Notes:

Civil Disobedience

Belfast Aiport Public Terminal

NE Section and SW Section

Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S8	
Designed By: Devin Freeman	Designed Date: 3/12/2024		
Drafted By: Alexei Hickey	Drafted Date: 4/19/2024	Scale: 3/16″ = 1′-0″	1/4″ 1/2″ 1″
Checked By: Parker Harriman	Checked Date: 4/19/2024		



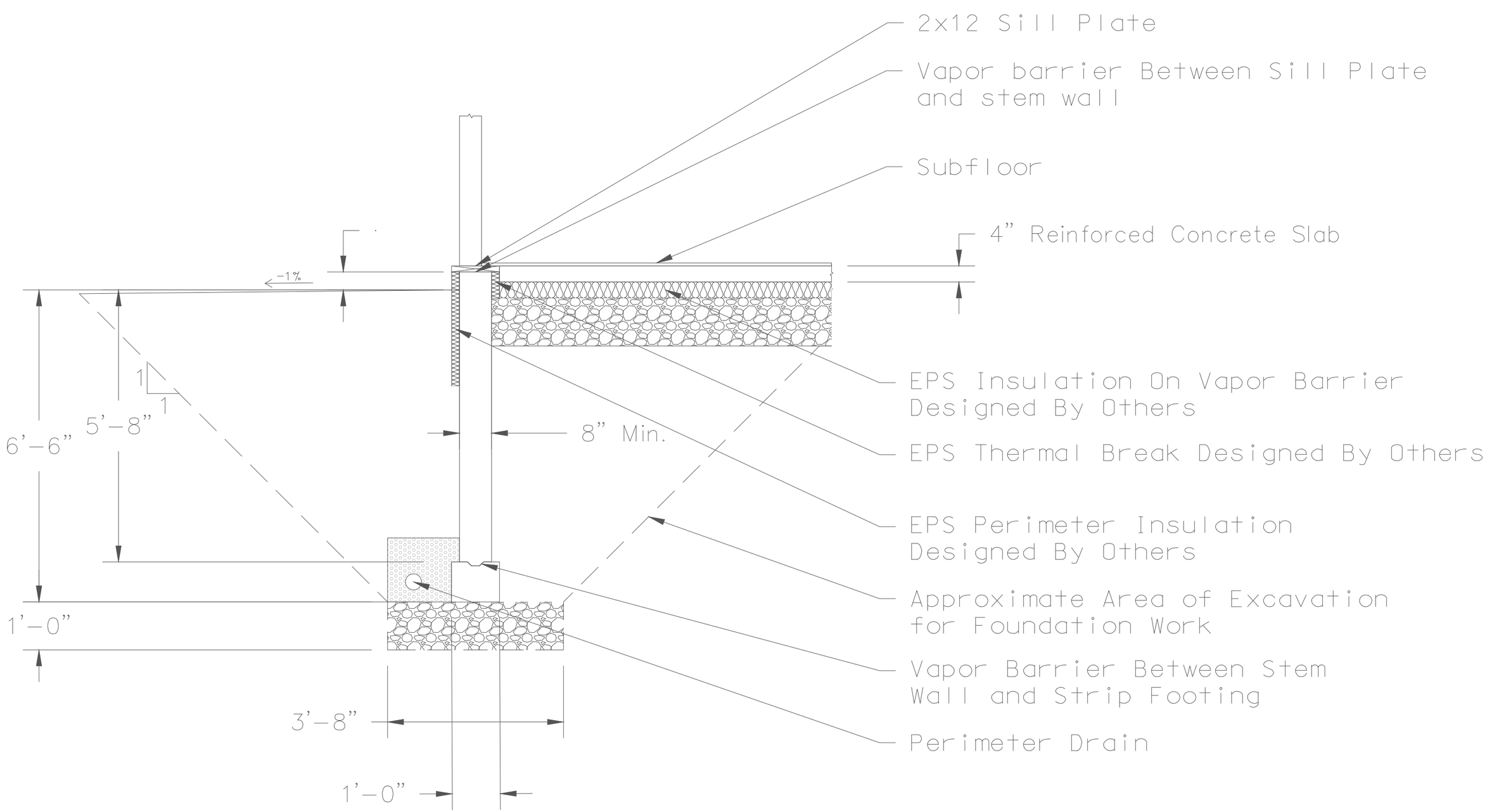
Notes:
1.) Rebar not shown for clarity. See Page S13 for reinforcement requirements for stem walls and strip footings. See Page S14 for reinforcement requirements for the slab.

Civil Disobedience

Belfast Aiport Public Terminal

Foundation Plan

Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S9	
Designed By: Devin Freeman	Designed Date: 4/3/2024		
Drafted By: Dylan Zenuh	Drafted Date: 4/4/2024	Scale: 1:10	1/4″ 1/2″ 1″
Checked By: Brennan Dunton	Checked Date: 4/22/2024		

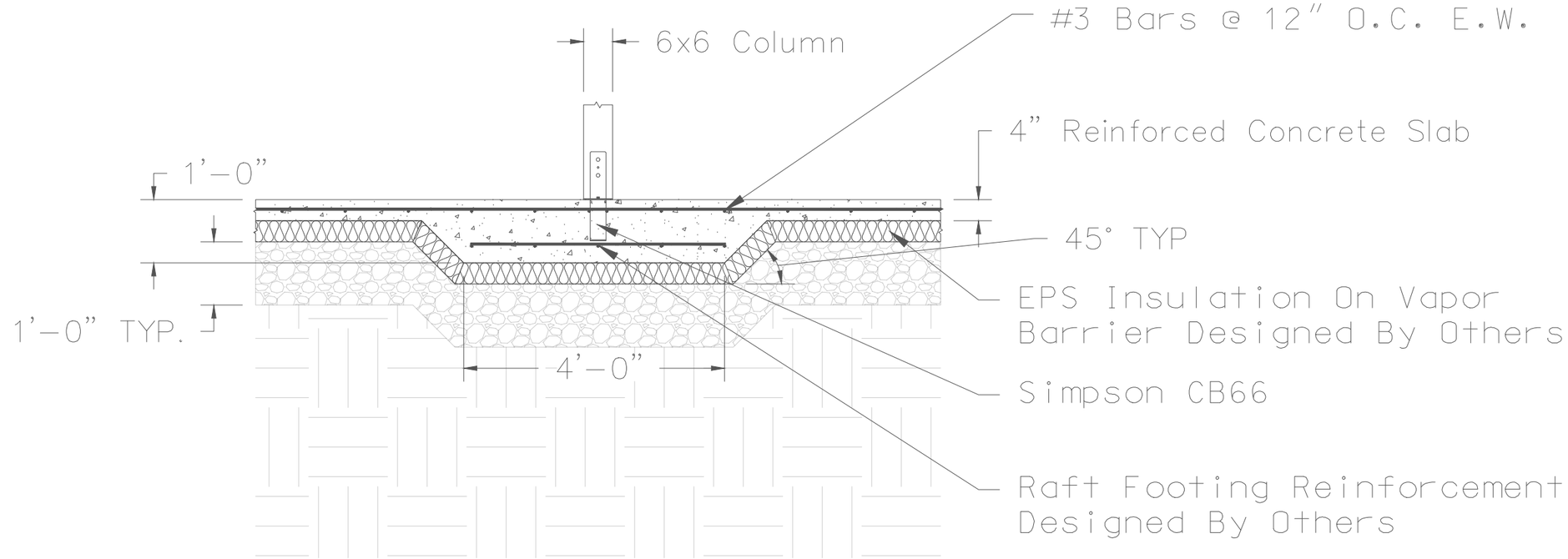


Notes:

1. Rebar not shown for clarity.
2. The perimeter drain shall be covered with well drained material wrapped with filter fabric.
3. Soil fill shall be completed in alternating lifts of no more than 24 inches.
4. Owner is responsible for removal of excess soil after soi replacement.

Civil Disobedience

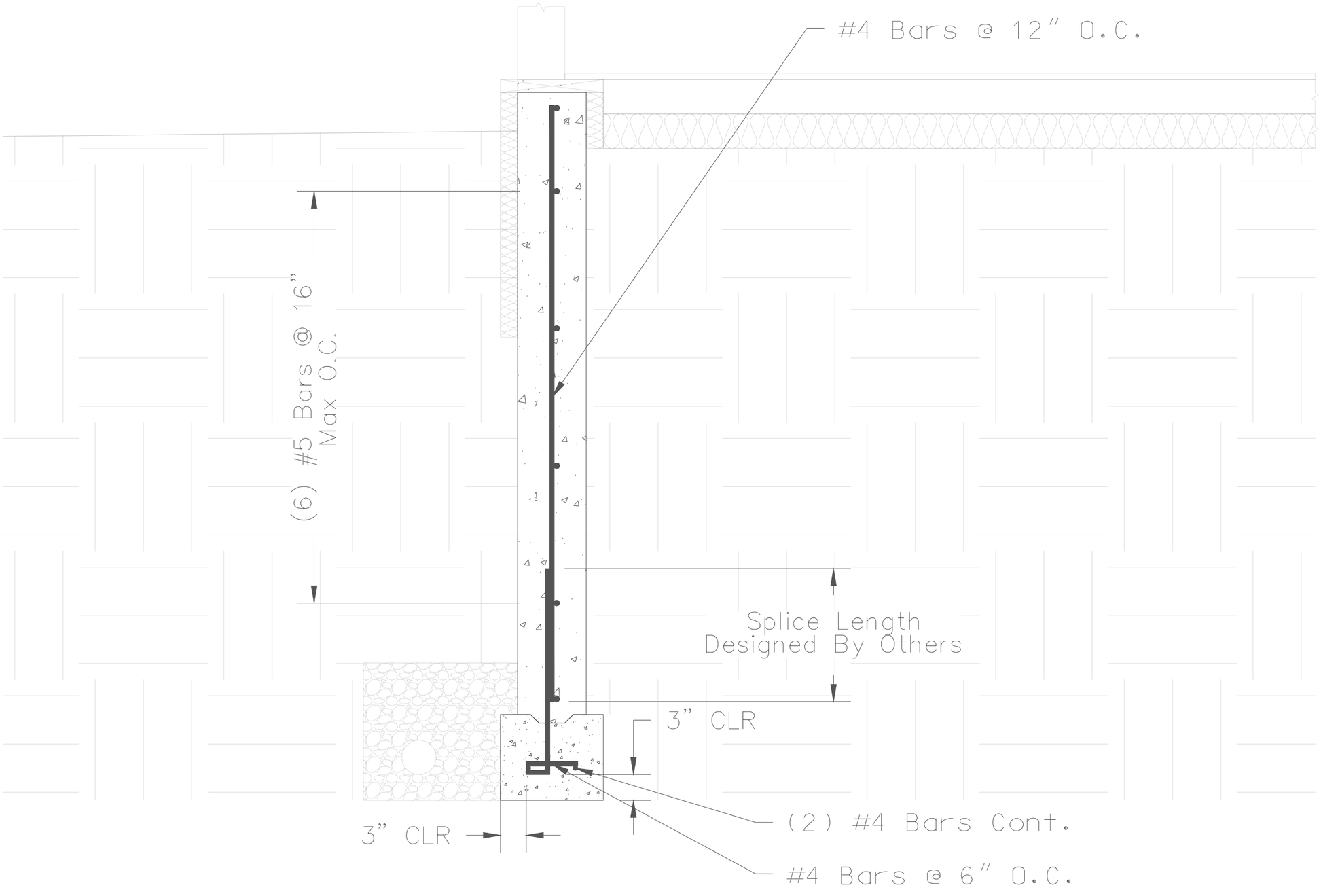
Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S10	
	Designed By: Devin Freeman	Designed Date: 3/12/2024		
Exterior Foundation Section	Drafted By: Parker Harriman	Drafted Date: 4/22/2024	Scale: 2" = 1'-0"	1/4" 1/2" 1"
	Checked By: Parker Harriman	Checked Date: 4/22/2024		



Notes:
1. Raft footing reinforcement to be designed by others.
2. Slab reinforcement and raft footing reinforcement shall maintain a minimum clear cover of 1.5".

Civil Disobedience

Belfast Aiport Public Terminal	Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S11
	Designed By: Devin Freeman	Designed Date: 4/3/2024	
Raft Footing Section	Drafted By: Parker Harriman	Drafted Date: 4/22/2024	Scale: 2" = 1'-0"
	Checked By: Brennan Dunton	Checked Date: 4/22/2024	



Notes:

1. All rebar shall be Fy = 60,000 psi.
2. All concrete shall have a 27-day strength of f'c = 3,000 psi.
3. All rebar placed in the strip footing shall meet a minimum of 3" of clear cover.
4. All rebar placed in the stem wall shall meet a minimum of 1.5" of clear cover.

Civil Disobedience

Belfast Aiport Public Terminal

Stem Wall and Strip Footing Detail

Project Mngr.: Brennan Dunton	Project Rep.: Cory Morse	Pg. #: S12	
Designed By: Devin Freeman	Designed Date: 4/3/2024		
Drafted By: Parker Harriman	Drafted Date: 4/22/2024	Scale: 1" = 1'-0"	1" 1" 1"
Checked By: Brennan Dunton	Checked Date: 4/22/2024		

Appendix B:

Permitting Documents

Please Type or Print on This Form

Form Approved OMB No.2120-0001
Expiration Date: 05/31/2026

U.S. Department of Transportation
Federal Aviation Administration

Failure To Provide All Requested Information May Delay Processing of Your Notice

Notice of Proposed Construction or Alteration

FOR FAA USE ONLY
Aeronautical Study Number

1. Sponsor *(person, company, etc. proposing this action):*
Attn. of
Name: _____
Address: _____
_____
City: _____ State: _____ Zip: _____
Telephone: _____ Fax: _____

2. Sponsor's Representative *(if other than #1):*
Attn. of
Name: _____
Address: _____
_____
City: _____ State: _____ Zip: _____
Telephone: _____ Fax: _____

3. Notice of: ☐ New Construction ☐ Alteration ☐ Existing

4. Duration: ☐ Permanent ☐ Temporary (___ months, _____days)

5. Work Schedule: Beginning _____ End _____

6. Type: ☐ Antenna Tower ☐ Crane ☐ Building ☐ Power Line
☐ Landfill ☐ Water Tank ☐ Other _____

7. Marking/Painting and/or Lighting Preferred:
☐ Red Lights and Paint ☐ Dual - Red and Medium Intensity
☐ White-Medium Intensity ☐ Dual - Red and high Intensity
☐ White -High Intensity ☐ Other

8. FCC Antenna Structure Registration Number *(if applicable)*:
_____

9. Latitude: ____ ° ____ ____ . ____ "

10. Longitude: ____ ° ____ ____ . ____ "

11. Datum: ☐ NAD 83 ☐ NAD 27 ☐ Other

12. Nearest: City: _____ State _____

13. Nearest *Public-use* *(not private-use)* or Military Airport or Heliport:
_____

14. Distance from #13. to Structure: _____

15. Direction from #13. to Structure: _____

16. Site Elevation ***(AMSL)***: _____ ft.

17. Total Structure Height ***(AGL)***: _____ ft.

18. Overall Height (#16 + #17) ***(AMSL)***: _____ ft.

19. Previous FAA Aeronautical Study Number *(if applicable)*:
_____-OE

20. Description of Location: *(Attach a USGS 7.5 minute Quadrangle Map with the precise site marked and any certified survey)*

21. Complete Description of Proposal:

Frequency/Power (kW)	

Notice is required by 14 Code of Federal Regulations, part 77 pursuant to 49 U.S.C., Section 44718. Persons who knowingly and willingly violate the notice requirements of part 77 are subject to a civil penalty of $1,000 per day until the notice is received, pursuant to 49 U.S.C., Section 46301(a)

I hereby certify that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to mark and/or light the structure in accordance with established marking & lighting standards as necessary.

Date	Typed or Printed Name and Title of Person Filing Notice	Signature

DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO COMPLY
MAINE CONSTRUCTION GENERAL PERMIT

APPLICANT INFORMATION (Owner)		AGENT INFORMATION (If Applying on Behalf of Owner)	
Name:		Name:	
Mailing Address:		Mailing Address:	
Mailing Address:		Mailing Address:	
Town/State/Zip:		Town/State/Zip:	
Daytime Phone #:	Ext:	Daytime Phone #:	Ext:
Email Address:		Email Address:	

PROJECT INFORMATION

Project Town:		UTM Northing & Easting (if known):		Tax Map and Lot Number:			
Size of disturbed area proposed:		Part of a larger project?	❑ Yes ❑ No	Creating a common plan of development or sale?	❑ Yes ❑ No	After the Fact?	❑ Yes ❑ No
Name of waterbody(ies) to which disturbed area would drain (or municipality if area drains to MS4):				Does the site drain to an Impaired Waterbody? If so, provide name:			
Brief Project Description:							
Project Location & Brief Directions to Site:							

NOTICE OF INTENT (NOI) FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS AND FEE

I am filing notice of my intent to carry out work that meets the requirements of the Construction General Permit (effective July 21, 2006). I have a copy of the Construction General Permit and have read and will comply with all of the standards. I have attached all the required submittals.

- ❑ ***Attach*** a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.
- ❑ ***Attach*** a drawing or site plan of the proposed activity.
- ❑ ***Attach*** an erosion and sedimentation control (ESC) plan.
- ❑ ***Attach*** photos of the project site that show existing character and topography of the area proposed for development.
- ❑ ***Attach*** if this form is not being signed by the property owner or lessee, documentation showing authorization to sign.
- ❑ ***Attach*** if any construction activity will occur in essential habitat, written approval from the Dept. of Inland Fisheries & Wildlife.
- ❑ ***Attach*** if the applicant is a corporation, LLC, or other legal entity, proof of legal name. Provide a copy of Secretary of State's *registration information* (available at http://icrs.informe.org/nei-sos-icrs/ICRS?MainPage=x). Individuals and municipalities are not required to provide any proof of identity.

FEE: Pay by credit card at the **Payment Portal**. The MCGP fee may be found here https://www.maine.gov/dep/feeschedule.pdf.

❑ ***Attach*** payment confirmation from the Payment Portal when filing this notification form.

Signature & Certification:

- I authorize staff of the Departments of Environmental Protection to access the project site for the purpose of determining compliance with the Construction General Permit**.**
- I understand coverage under the Construction General Permit becomes effective 14 calendar days after receipt by the Department of this completed form, the required submissions, and fee, *unless the Department approves or denies the NOI prior to that date.*

By signing this Notice of Intent, I represent that the project meets all the requirements for coverage under the Construction General Permit and that the project will be completed in compliance with the Construction General Permit. I also represent that the applicant has sufficient title, right, or interest in the property where the construction activity will place.

Signature of Applicant or Agent (may be typed):		**Date:**	

***Keep a copy as a record of permit*.** Email this completed form with attachments to DEP at: DEP.PBRNotification@maine.gov. This email account is used to receive PBRs and NOIs. No further authorization will be issued by DEP after receipt of this notice. **Work carried out in violation of the Construction General Permit is subject to enforcement.**

Date Received:	**APPLICATION FOR DRIVEWAY/ENTRANCE PERMIT** **Mid Coast Region 2** **98 Statehouse Station** **AUGUSTA, ME 04333** **Phone: (207)-624-8200 FAX 207-287-4753**
Application No. _____	

Application is hereby made to construct, change location, grade or use served by a driveway or entrance to property in accordance with Title 23 M.R.S.A. § 704 and §705.

Section A Property Owner Information

1. Land Owner's Name: _____ Phone#_____
2. Land Owner's Mailing Address: _____
   Address Town/City State Zip Code
3. Applicant or Agent's Name: _____ Phone #_____
4. Applicant/Agent Mailing Address: _____
   Address Town/City State Zip Code
5. Other contact information: _____ Work _____ Cell_____

Section B Property Location Information

6. Directions to property: _____

   _____

   _____
7. Route No. _____ Road Name: _____
8. ❒North ❒ South ❒East ❒West – side of highway
9. City/Town: _____ County: _____
10. Distance from nearest intersection: _____ Name of Intersection: _____
    (estimated in tenths of a mile)
11. Nearest Utility Pole #: _____ Attach Survey Data *(if available)*
12. Map and Lot number _____(**MUST** provide copy of tax map) Lot prior to May 25,2002? ___ Yes ____No

Proposed Location of Driveway/Entrance shall be staked and flagged by applicant.

Section C Driveway/ Entrance Information

13. Desired width of Driveway/Entrance: _____ (feet) Type of Surface: _____ (gravel, pavement, etc.)
14. Will the development associated with this driveway/entrance have more than 10,000 square feet of impervious surface draining towards the highway? YES _____ NO _____ "Impervious surfaces" are the footprint of buildings, pavement, gravel, or other low-permeability or compacted surfaces, not including natural or man-made water bodies.
15. Does your property have an existing access? _____yes _____no (If no go to line 18)
16. If this is an existing access and you are changing its use, please describe _____

    _____ Go to Section D.
17. If this is an existing access and you are physically modifying, please describe: _____

    _____ Go to Section D.
18. Proposed Driveway/Entrance Purpose: ❒ Single Family Residence ❒ Home Business ❒ Commercial/Industrial

    ❒ Subdivision or Development ❒ Multi-family with 5 or less units ❒ Multifamily with more than 5 units

    ❒ Retail ❒ Office ❒School ❒Business Park ❒ Mall ❒ Other (explain)_____

    # employees/day _____ # customers/day _____ Busiest time of day _____ # of Lots _____

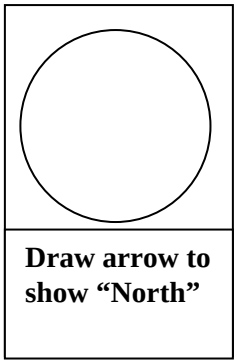
Section D Construction Information

19. Construction expected to begin on _____ (date) and be completed on _____ (date)
20. Person/Company constructing entrance _____
21. Construction contacts name _____ Phone _____

Site Sketch or attach Site Plan

THE OWNER HEREBY AGREES

1) Provide, erect and maintain all necessary barricades, lights, warning signs and other devices to direct traffic safely while the work is in progress.
2) **At no time cause the highway to be closed to traffic.**
3) Where the drive/entrance is located within a curb, curb and gutter, and/or sidewalk section, completely remove the existing curb, curb and gutter, and/or sidewalk as may be required to create the drive/entrance and restore drainage. All driveways/entrances abutting sidewalk sections shall meet the requirements set forth in the Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12132 et seq.
4) Obtain, deliver to site and install any culverts and/or drainage structures necessary for drainage; the size, type and length of such culverts or structures shall be as specified in the permit pursuant to 23 M.R.S.A. § 705. **All culverts and/or drainage structures shall be new.**
5) Complete construction of proposed driveway/entrance within twelve months of commencement of construction.
6) **COMPLY WITH ALL FEDERAL, STATE AND MUNICIPAL LAWS AND ORDINANCES.**
7) Not alter, without the express written consent of the MDOT, any culverts, drainage patterns or swales within MDOT right-of-way.
8) File a copy of the approved driveway/entrance permit with the affected municipality or LURC, as appropriate, within 5 business days of receiving the MDOT approval.
9) Shall construct and maintain the entrance side slopes to be no steeper than the adjacent roadway side slopes, but in no case to be steeper than 3 horizontal to 1 vertical, unless the side slope is behind existing roadway guardrail, in which case it shall be no steeper than 2 horizontal to 1 vertical.
10) Notify the MeDOT(in writing) of a proposed change to use served by driveway/entrance when increase in traffic flow is expected to occur. This does not exempt the need for obtaining a Traffic Movement Permit (TMP) if trip generation meets or exceeds 100 passenger car equivalents (pce) during the peak hour of the day.



FURTHER CONDITION OF THE PERMIT:

The owner shall assume the defense of, and pay all damages, fines, and penalties for which he/she shall become liable, and shall indemnify and safe harmless said Department, its representatives, agents and employees from liability, actions against all suite, claims, damages for wrongful death, personal injuries or property damage suffered by any person or association which results from the willful or negligent action or inaction of the owner/applicant/agent and in proceedings of every kind arising out of the construction and maintenance of said entrance(s), including snow removal. Nothing herein shall, nor is intended to, waive and defense, immunity or limitation of liability which may be available to the MDOT, their officers, agents or employees under the Maine Tort Claims Act or any other privileges and/or immunities provided by law.

The submission of false or misleading statements on or with this application, or the omission of information necessary to prevent statements submitted herein or herewith from being misleading, is a crime punishable under Chapter 19 of the Maine Criminal Code, and any permit issued in reliance thereon will be considered null and void without notice or further action by the Department.

Date Filed: _____ _____

Signature of Owner

Signature of Applicant_____

☐ **By signing and checking this box I hereby certify that I have been granted permission from the property owner to act in their behalf.**

City of Belfast
Dept. of Planning and Code Enforcement
131 Church St., Belfast, ME 04915
Voice (207) 338-1417 Ext. 125
Fax (207) 338-1605

BUILDING PERMIT APPLICATION

Property Owner | **Property Address** | **Map** | **Lot**

Mailing Address (If Different) | **City** | **State** | **ZIP**

Phone | **Cell** | **Email**

Applicant/Contractor (If Different)

Mailing Address | **City** | **State** | **ZIP**

Phone | **Cell** | **Email**

Design Professional, Consultant, or Engineer (If Any)

Mailing Address | **City** | **State** | **ZIP**

Phone | **Cell** | **Email**

Zoning District _____ **Flood Zone District** ☐ VE ☐ A ☐ AE ☐ AO ☐ None

Shoreland District ☐ GD ☐ LR ☐ RP ☐ UR ☐ SP ☐ SD ☐ WF ☐ MHP ☐ None

Elevation, If Any _____ **Elevation Certificate** ◯ Yes ◯ No

Applicant Estimated Cost _____ **CEO Determination of Cost** _____

I certify that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for denial of my permit. I agree to inspections by the Code Enforcement Officer at reasonable hours. I agree to abide by the City requirements and permit conditions.

Applicant Signature _____ **Date** _____

Certificate of Occupancy Fee: _____ Date Paid: _____

FOR OFFICE USE ONLY

Fee _____ **Paid By** _____ **Date Paid** _____

Permit No. _____ **Issued By** _____ **Date Issued** _____

BUILDING PERMIT APPLICATION

Property Owner	Property Address	Map	Lot

TYPE OF IMPROVEMENT(S)

☐ New Building or Structure ☐ Demolition ☐ Renovation
☐ Repair/Replace ☐ Addition ☐ Other **Other Desc.** _____

USE OF BUILDING/PROPERTY

RESIDENTIAL

☐ One Family
☐ Two Family
☐ Multi-Family **# Units** _____
☐ Mobile Home
Model _____ **Year** _____
Serial Number _____
☐ Garage
☐ Shed
☐ Deck
☐ Fence
☐ Ramp
☐ Stairs
☐ Other _____

NON-RESIDENTIAL/MIXED USE

☐ Retail and Wholesale
☐ Office, Bank, Professional Services
☐ Restaurant
☐ Lodging, Hotel, Motel
☐ Amusement, Recreational
☐ School, Library, Institutional
☐ Service Station, Repair Garage
☐ Healthcare Facilities and Services
☐ Industrial and Manufacturing
☐ Construction Services
☐ Storage, Warehouse
☐ Other _____

Please provide a plot plan showing the location and size of any existing and proposed buildings, roads, driveways, septic Systems, wells, land clearing and landscaping. See examples on last page. Use extra sheet if necessary.

BUILDING PERMIT APPLICATION

Property Owner	Property Address	Map	Lot

FOR ALL CONSTRUCTION EXCEPT ONE AND TWO FAMILY DWELLINGS

NOTE: MOST NON-RESIDENTIAL STRUCTURES, ADDITIONS AND SOME ALTERATIONS REQUIRE PLANS DRAWN AND SEALED BY A LICENSED PROFESSIONAL ARCHITECT OR ENGINEER. THE CITY HAS ADOPTED THE 1996 BOCA BUILDING CODE. MORE RECENT VERSIONS OF THE BOCA OR IBC ARE ACCEPTED. A PLAN FROM AN ARCHITECT OR ENGINEER SHOULD STATE IF THE PLAN MEETS THE STANDARDS.

☐ Wood ☐ Masonry or Steel ☐ Heavy Timber ☐ Non-Combustible Type 1 ☐ Non-Combustible Type

Sewage_Type
☐ Public
☐ Private (Septic)

Water_Type
☐ Public
☐ Private (Well)

Number of Off-Street Parking Spaces _____

Number of Bedrooms (Residential Only) _____

Overall Dimensions Main Building _____ **ft. X** _____ **ft.**

Number of Stories _____ **Building Height** _____

Other Building (Specify: _____ **)** _____ **ft. X** _____ **ft. X** _____ **ft.**

Floor Area (square feet)

Basement _____ ☐ Finished ☐ Unfinished

1st Floor _____ **3rd Floor** _____

2nd Floor _____ **Other Floors** _____

Heating

☐ Oil ☐ Gas ☐ Electric ☐ Other _____

Foundation

☐ Full ☐ Post/Columns ☐ Wood
☐ Crawl Space ☐ Concrete ☐ Other
☐ Slab ☐ Block _____

Thickness _____ **Reinforcement** _____

Footing Size _____ **Thickness** _____

Wall-Ceiling Framing

Exterior Stud Material & Dimensions _____

Exterior Wall Stud Spacing _____

Sheathing Material & Thickness _____

Ceil. Joist Size _____ **Spacing** _____ **Max Span** _____

Floor Systems

First Floor

Joist Size _____ **Spacing** _____ **Max Span** _____

Other Floors

Joist Size _____ **Spacing** _____ **Max Span** _____

Joist Carrier Materials & Size _____

Supp. Columns Materials & Spacing _____

Floor Sheathing Materials & Thick. _____

Roof System

Roof_Type ☐ Rafters ☐ Truss **Pitch** _____

Rafter Size _____ **Spacing** _____ **Max Span** _____

Sheathing Material & Thickness _____

Type of Roof Covering _____

(Must be fire resistive)

Decks Only

Joist Size _____ **Spacing** _____ **Max Span** _____ **Joist Carrier Material & Dimension** _____

Support Column Materials _____ **Spacing** _____ **Decking Materials** _____

Height of Deck from Grade _____ **Guard Rail Height** _____ **Baluster Spacing** _____

(No more than 4" opening)

BUILDING PERMIT APPLICATION

Property Owner	Property Address	Map	Lot

STRUCTURE SIZE - Structure #1 **Attach page for each additional structure**

	Required Setbacks	Existing Setbacks	Proposed Setbacks
Front			
Side			
Side			
Rear			
Height			

	Required Lot Size	Existing Lot Size	Proposed Lot Size
Area			
Frontage			

Description. Describe in detail the work to be done (Example: Add a single story 10 ft. by 15 ft. kitchen addition on a frost wall foundation, with asphalt roofing. Original kitchen to be removed).

☐ Use Permit By
☐ CEO ☐ Planning Board Date

☐ Site Plan Approval By
☐ CEO ☐ Planning Board Date

☐ Appeals Board Date

☐ Plumbing Internal Date

☐ Electrical
☐ City ☐ State Date

☐ Waste Disposal
☐ Septic ☐ City Sewer Date

☐ Driveway/Entrance
☐ City ☐ MDOT Date

☐ Building Permit Date

☐ Shoreland Zone Date

☐ Fire Marshal Office
☐ Construction ☐ ADA Date

☐ BOCA or ICC Review Date

☐ DEP

☐ Design Review

☐ Other

Conforming ○ Yes ○ No

Conditions

Amendments

City of Belfast
Dept. of Planning and Code Enforcement
131 Church St., Belfast, ME 04915
Voice (207) 338-1417 Ext. 125
Fax (207) 338-1605

DEMOLITION PERMIT APPLICATION

Property Owner | Property Address | Map | Lot

Mailing Address (If Different) | City | State | ZIP

Phone | Cell | Email

Applicant/Contractor (If Different)

Mailing Address | City | State | ZIP

Phone | Cell | Email

Location of Demolition

☐ Construction Waste ☐ Structure Removal
Demolition Type

Date Demolition to Begin | Expected Completion Date

Description. Describe the structures to be removed, how and where the materials will be disposed (dumpster, waste hauler, burning, burial, etc.). State the approximate amount of waste generated, and list any hazardous materials (asbestos, lead paint, waste oil, etc.).

Tax Assessing Department

After waste or structure removal, Please sign this section and return to Assessing Department.

Email - assessing@cityofbelfast.org

Phone - (207) 338-3370 ext.122

Date Structure Removed _____

Applicant Signature _____

DEMOLITION PERMIT APPLICATION

Property Owner	Property Address	Map	Lot

THE APPLICANT AND ANY SUBCONTRACTOR OR PERSON DOING THE DEMOLITION SHALL

A. PROPERLY COLLECT AND DISPOSE OF ALL MATERIALS, INCLUDING USING A LICENSED DISPOSAL SITE TO ACCEPT THE MATERIAL. THE APPLICANT MUST PROVIDE EVIDENCE TO THE CODE ENFORCEMENT OFFICER THAT ALL MATERIALS ARE PROPERLY DISPOSED.
B. NOTIFY THE CEO AND APPROPRIATE STATE AND FEDERAL OFFICIALS OF ANY HAZARDOUS MATERIALS LOCATED ON THE SITE THAT ARE TO BE DISPOSED AND SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS THAT APPLY TO THE COLLECTION AND DISPOSAL OF SUCH MATERIALS.
C. OBTAIN ANY REQUIRED PERMIT, IF BURNING, FROM THE CITY FIRE CHIEF AND COMPLY WITH ALL CONDITIONS ON THE BURN PERMIT.
D. PROPERLY POST AND TAKE NECESSARY MEASURES TO ENSURE PUBLIC SAFETY ON THE DISPOSAL SITE. THIS MAY INCLUDE, AT A MINIMUM, POSTING NOTICE OF THE DEMOLITION ACTIVITY AND PREVENTING UNAUTHORIZED ACCESS TO THE DEMOLITION AREA.
E. OTHER _____

I certify that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for denial of my permit. I agree to inspections by the Code Enforcement Officer at reasonable hours. I agree to abide by the City requirements and permit conditions.

Applicant Signature _____ **Date** _____

FOR OFFICE USE ONLY

Fee _____ **Paid By** _____ **Date Paid** _____

Permit No. _____ **Issued By** _____ **Date Issued** _____

THIS SECTION FOR OFFICE USE ONLY
Tax Information

Applicant has paid taxes pertaining to the property and has the approval from the City of Belfast to remove the proposed structure.

City Representative Signature _____

Date _____

City of Belfast
Dept. of Planning and Code Enforcement
131 Church St., Belfast, ME 04915
Voice (207) 338-1417 Ext. 125
Fax (207) 338-1605

ELECTRICAL PERMIT

Property Owner | **Property Address** | **Map** | **Lot**

Mailing Address (If Different) | **City** | **State** | **ZIP**

Phone | **Cell** | **Email**

Applicant/Electrician

Mailing Address | **City** | **State** | **ZIP**

Phone | **Cell** | **Email**

CMP Account or Work Order #

Project Cost Estimate

This application is for
- ☐ New Service
- ☐ Upgrading of Service
- ☐ Temporary Service
- ☐ Existing Service
- ☐ Continuation

Type of Structure serviced
- ☐ One or Two Family Dwelling
- ☐ Mobile Home
- ☐ Assessory Structure
- ☐ Other _____

To be installed by
- ☐ Master Electrican
- ☐ Owner
- ☐ Other _____

Type of Service
- ☐ 60 Amp
- ☐ 100 Amp
- ☐ 200 Amp
- ☐ 400 Amp
- ☐ New Panel(s)
- ☐ Electrical Alarm system

Location of Work
- ☐ Existing Building
- ☐ New Building
- ☐ Addition
- ☐ Assessory Building (Barn, Garage, etc).

Estimated_Cost

Type and number of Devices
- ☐ Recepticals
- ☐ Switches
- ☐ Fixtures
- ☐ Electrical Heat Unit
- ☐ Smoke Detectors (Hardwired)
- ☐ Other _____

I certify that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the local Electrical Inspector to deny my permit.

Signature (Electrician) _____ **Date** _____

Electrician_License _____

FOR OFFICE USE ONLY

Fee _____ **Paid By** _____ **Date Paid** _____

Permit No. _____ **Issued By** _____ **Date Issued** _____

PLUMBING APPLICATION

Maine DHHS/CDC – Division of Environmental & Community Health

PROPERTY ADDRESS		ISSUING MUNICIPAL OFFICE			
City, Town, or Plantation		Town/City			
Street/Subdivision Lot #		Permit #		Total Fee	$
PROPERTY OWNER INFORMATION		Date Issued		Double Fee	
Name (Last, First)					
Applicant Name (Last, First)		Local Plumbing Inspector Signature		License #	
OWNER/APPLICANT MAILING ADDRESS		**FEES** State	$	Local	$
Street		**LOCATION** Map #		Lot #	
City		Internal plumbing fixtures and piping may not be installed until a permit is issued by the Local Plumbing Inspector. The permit authorizes the owner or installer to install the plumbing system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.			
State / Zip Code					
OWNER/APPLICANT STATEMENT					
I certify that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Local Plumbing Inspector(s) to deny a permit.		**CAUTION: INSPECTION REQUIRED** I have inspected the installation authorized above and found it to be in compliance with the Maine Plumbing Rules Application.			
Signature of Owner/Applicant	Date	LPI Signature		Date (Rough-In)	
				Date (Final)	

Copy: Property Owner ☐ Town ☐ State ☐

PERMIT INFORMATION

This application is for:		Type of structure to be served:		Plumbing to be installed by:			
New Plumbing		Single Family Residence		Master Plumber		License #	
Relocated Plumbing		Modular or Mobile Home		Oil Burner Installer		License #	
		Multiple Family Dwelling		Mfd. Housing Rep.		License #	
		Other (specify below)		Public Utility Rep.		License #	
				Property Owner			

Column 1 – Hook-Up & Relocation	Column 2 – Fixtures		Column 3 – Fixtures	
Maximum 1 Hook-Up	**Type of Fixture**	**Qty**	**Type of Fixture**	**Qty**
Hook-Up (a) ☐ *Hook-up to public sewer in those cases where the connection is not regulated and inspected by the local sanitary district.*	Hosebib/Sillcock		Bathtub (and Shower)	
	Floor Drain		Shower (Separate)	
	Urinal		Sink	
	Drinking Fountain		Wash Basin	
Hook-Up (b) ☐ *Hook-up to an existing subsurface wastewater disposal system.*	Indirect Waste		Water Closet (Toilet)	
	Treatment Softener, Filter, etc.		Clothes Washer	
	Grease/Oil Separator		Dishwasher	
Piping Relocation ☐ *Relocation of sanitary lines, drains, and piping without new fixtures.*	Roof Drain		Garbage Disposal	
	Bidet		Laundry Tub	
	Other:		Water Heater	

Total Column 1 ☐ **+** **Total Column 2** ☐ **+** **Total Column 3** ☐ **=** **Enter Total Fixtures / Hook-Ups Below**

PERMIT TRANSFER ONLY ☐ $10.00

Total Fixtures / Hook-Ups	
Per-Fixture Fee	$
TOTAL PERMIT FEE	$

State of Maine

Department of Health and Human Services/ Center for Disease Control and Prevention

Environmental & Community Health – Subsurface Wastewater

286 Water Street
State House Station 11
Augusta, ME 04333

207-287-2070

HHE-211
Revised 7/24/2018

BELFAST WATER DISTRICT, 285 NORTHPORT AVENUE, P.O. BOX 506, BELFAST, MAINE 04915-0506
Tel: 207-338-1200 Fax: 207-338-0444 E-mail: info@belfastwater.org

APPLICATION FOR SERVICE INSTALLATION

I. APPLICANT INFORMATION (Please Print)

Name: _____
Address: _____
Telephone #:_____

II. PROPERTY DESCRIPTION (Please Print)

Street Address: _____
Tax Map & Lot Numbers: _____
Owner of Property: _____
Building Permit # (If applicable):_____Internal and/or external Plumbing Permit #:_____

III. PLEASE FURNISH: diagram or plans of construction and include the following:
1) Other Utilities 2) Driveway 3) Location of building 4) W + E
N
S

IV. TYPE OF WATER SERVICE REQUIRED:

Size of Service Line: _____ Size of Meter _____

- ☐ **Single family residence**
- ☐ **Multi-family residence (list number of units _____)**
- ☐ **Apartment building (list number of units _____)**
- ☐ **Commercial establishment (describe type of business _____)**
- ☐ **Subdivision (type of development and number of units to be served)**
- ☐ **Sprinkler service for fire protection**
- ☐ **Other (please describe) _____**

V. Date water service is required: _____

VI. Authorization of Property Owner and Applicant:

In submitting this Application for Water Service Installation, the undersigned property owner and applicant agree to adhere to the Terms and Conditions for Water Service Installations of the Belfast Water District (as described on page 2 of this application); and authorize representations of the Belfast Water District to enter the above described premises to inspect the installation of services and mains, and to install, repair and remove the water meter(s) and related apparatus. The applicant further understands that the Belfast Water District will review the application for completeness and shall inform the applicant in writing that service can or cannot be provided or that additional information is necessary before a decision to render service can be reached.

_____ _____
Signature of Applicant **Signature of Property Owner**

VII. Action by Belfast Water District:	**DATE**	**BY**
☐ **Application Received**	_____	_____
☐ **Application Complete**	_____	_____
☐ **Application Incomplete**	_____	_____
☐ **Additional Data Requested**	_____	_____
☐ **Additional Data Received**	_____	_____
☐ **Application Approved**	_____	_____
☐ **Application Approved with Conditions**	_____	_____
☐ **Main Extension Required (follow main extension rules)**	_____	_____
☐ **Belfast Planning Board Notified, (if needed)**	_____	_____

TYPES, TERMS AND CONDITIONS FOR WATER SERVICE INSTALLATIONS

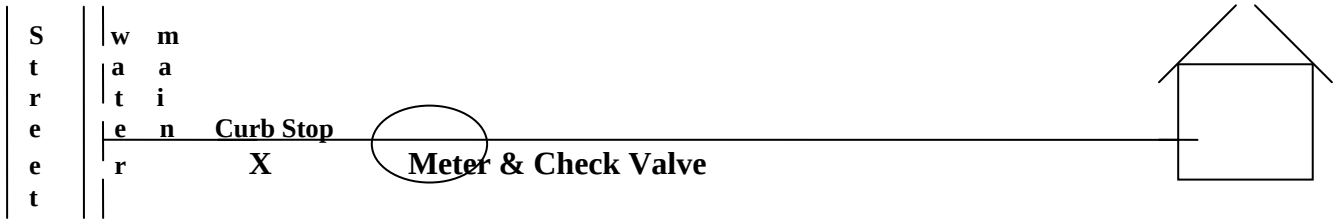
Service installations are regulated by, but not limited, to the following terms and conditions. A complete copy of the Belfast Water District's terms and conditions is available upon request.

EXAMPLE # 1

1. **a) A low pressure agreement may be necessary, if water pressure is too low.**
   b) All water services shall be equipped with an approved backflow device (check valve).
   c) No service pipe shall be laid in the same trench as sewer, gas, storm drains, electric cable or any other facility of public utility.
   d) A 10 foot separation must be maintained from any sewer pipe.
2. **The customer pays for the complete service installation from the main to the house. *Prepayment* is required before work begins. That portion of service pipe between the main and the curb stop shall be maintained and repaired by the Belfast Water District. The remainder of the service pipe between the curb stop and the meter shall be repaired and maintained by the customer at the customer's expense.**
3. **No more than one customer may be served from a service pipe under the control of a single curb stop or shutoff.**
4. **The customer must provide a clean, warm, dry and accessible location for the water meter.**

EXAMPLE # 2 - METER PIT

1. **If the premises to be served is more than 200 feet from the main, the water meter shall be placed in a meter pit at the edge of the right of way.**
2. **a) A low pressure agreement may be necessary, if water pressure is too low.**
   b) All water services shall be equipped with an approved backflow device (check valve).
   c) No service pipe shall be laid in the same trench as sewer, gas, storm drains, electric cable or any other facility of public utility.
   d) A 10 foot separation must be maintained from any sewer pipe.
3. **The customer pays for the complete service installation from the main to the house. *Prepayment* is required before work begins. That portion of service pipe from the main to the homeowners side of the meter then becomes the property of the Belfast Water District to repair and maintain. The remainder of the service pipe after the meter and into the house shall be repaired and maintained by the customer at the customer's expense.**
4. **No more than one customer may be served from a service pipe under the control of a single curb stop or shutoff.**



City of Belfast
Dept. of Planning and Code Enforcement
131 Church St., Belfast, ME 04915
Voice (207) 338-1417 Ext. 125
Fax (207) 338-1605

SEWER CONNECTION APPLICATION

Property Owner _____ Property Address _____ Map _____ Lot _____

Mailing Address (If Different) _____ City _____ State _____ ZIP _____

Phone _____ Cell _____ Email _____

Applicant/Contractor (If Different) _____

Mailing Address _____ City _____ State _____ ZIP _____

Phone _____ Cell _____ Email _____

Mailing Address _____ City _____ State _____ ZIP _____

Phone _____ Cell _____ Email _____

Water Account # (if any) _____ Assessment Fee (if any) _____

Type of Unit to be Served ☐ New ☐ Existing ☐ Residential ☐ Commercial Construction to Begin _____

Number of Bedrooms _____ Estimate Gal/Day Use _____ Expected Completion _____

I certify that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for denial of my permit. I agree to inspections by the Code Enforcement Officer at reasonable hours. I agree to abide by the City requirements and permit conditions.

Applicant Signature _____ Date _____

FOR OFFICE USE ONLY

Fee _____ Paid By _____ Date Paid _____

Permit No. _____ Issued By _____ Date Issued _____

Permit Review By ☐ CEO ☐ Planning Board

SEWER CONNECTION APPLICATION

Property Owner	Property Address	Map	Lot

Approval to connect and discharge sewerage will only be approved if there is existing sanitary sewer and treatment plant capacity available for the described project. Installation must conform to City standards in City Code of Ordinances Chapter 62.

The Superintendent of the City Wastewater Treatment Plant (WWTF) and the Director of Public Works (or their duly authorized agent) must authorize the connection and discharge.

☐ Approved ☐ Denied **PWD Approval By** _____ **Date** _____

Road Opening Escrow (if any) _____

Comments or Conditions

_____

_____

_____

_____

_____

_____

☐ Approved ☐ Denied **WWTF Approval By** _____ **Date** _____

Comments or Conditions

_____

_____

_____

_____

_____

_____

Appendix C:

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