ENG 1902 ENGLISH ASSESSMENT

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REGISTER NO: 22MIS0172

PROPOSAL FOR EARTH-SHELTERED CONSTRUCTION

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Downing Constructions

EXECUTIVE SUMMARY

Overview

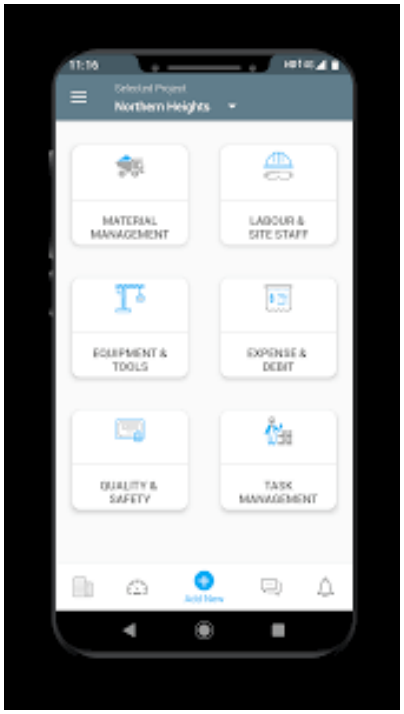
We are excited to share our plan for an Earth-sheltered building. The submitted RFP materials have been examined by our main team, and I do not doubt that our zeal, attention to detail, and prior expertise will enable us to achieve an amazing project conclusion. We are confident that our prior experience managing similar projects will allow us to address these challenges and deliver a successful final product even though this project is accompanied by many challenges, including operating in a densely populated area, adhering to strict schedules, and working within a tight budget.

Problems

- Unaffordable prices for mid-size projects.
- Lack of communication and transparency

Solutions Offered

- App-based tracking which provides weekly updates and goals.
- Optimizing the supply chain for our materials to reduce costs thus offering competitive prices.



1.1 Introduction:

An earth-sheltered home employs a considerable amount of earth (dirt, soil, subsoil, etc.) as a protective barrier on a significant piece of the house's exterior. These buildings include various energy-saving measures and are frequently intended to use solar energy for heating and cooling. Some designs use recycled materials into their design.

1.2 Advantage of Earth Sheltered Homes:

Earth-sheltered structures have several advantages. Since an earth-sheltered home is less vulnerable to the impacts of severe external air temperatures, you will not experience the effects of bad weather as much as you would in a traditional house. Internal temperatures are more consistent than in traditional dwellings, and interior spaces appear more pleasant with less temperature change.

Earth-sheltered houses require less outside upkeep, such as painting and cleaning gutters, because the earth covers part or all of their exterior. Building a home buried in the dirt or surrounded by earth provides natural soundproofing. Most earth-sheltered house plans "blend" the structure into the environment more harmoniously than a conventional residence. Finally, earth-sheltered homes may be less expensive to insure since their construction provides additional protection from strong winds, hailstorms, and natural catastrophes like tornadoes and hurricanes.

1.3 Disadvantage of Earth Sheltered Homes:

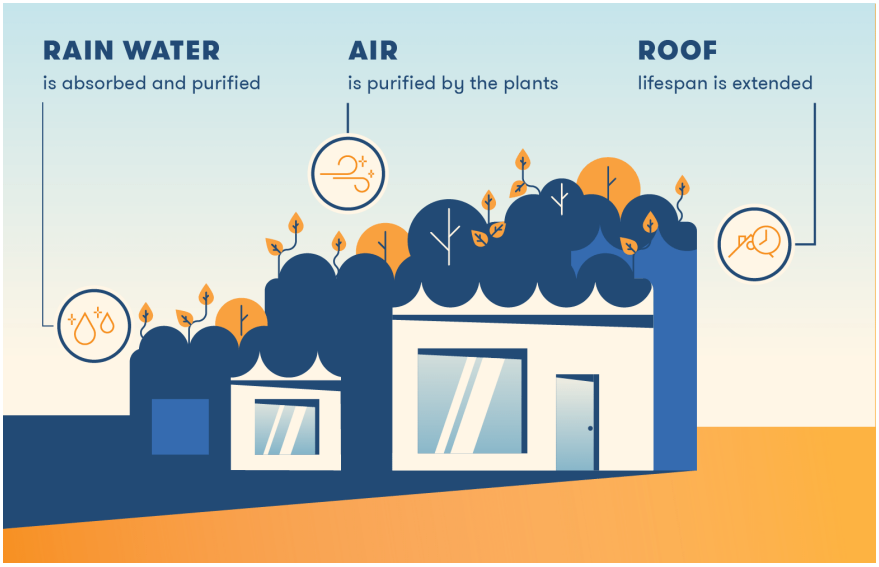
Earth-sheltered houses require less outside upkeep, such as painting and cleaning gutters, because the earth covers part or all of their exterior. Building a home buried in the dirt or surrounded by earth provides natural soundproofing. Most earth-sheltered house plans "blend" the structure into the environment more harmoniously than a conventional residence. Finally, earth-sheltered homes may be less expensive to insure since their construction provides additional protection from strong winds, hailstorms, and natural catastrophes like tornadoes and hurricanes.

2.1 Designs:

The various types of earth-sheltered homes are:

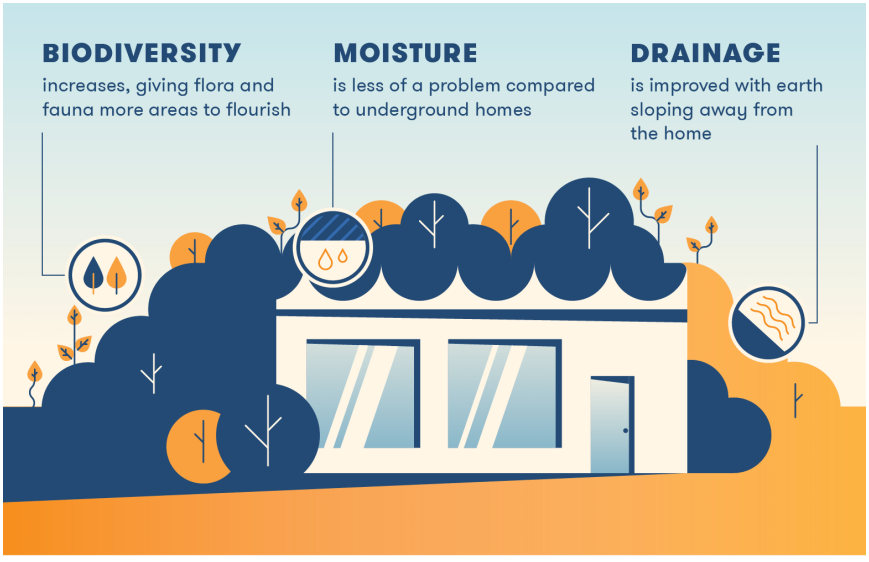
1.3.1 Earth-Covered Homes:

Earthen dwellings only have roofs covered in earth. These roofs are commonly referred to as "living roofs," "green roofs," or "earth roofs." Living roofs might be as simple as earth or soil, or as complex as luxuriant flora and plants. A living roof is common in most other forms of earth-protected dwellings.



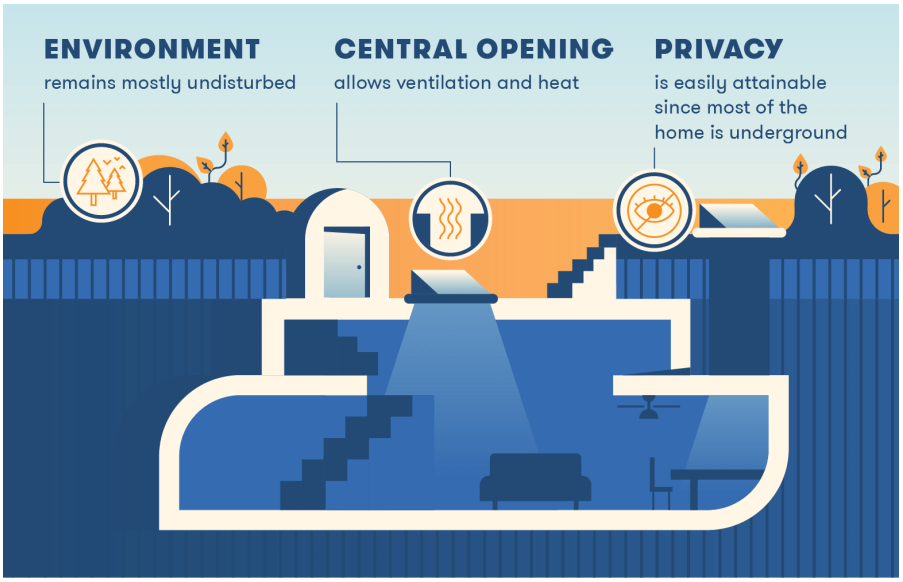
1.3.2 Bermed Homes:

Bermed homes typically have earth pushed up against the exterior walls and may have earth covering the roof. The earth surrounding the home helps insulate the interior temperature by absorbing and storing heat. The soil also helps manage storm drainage since the earth against the walls slopes away from the home.



1.3.3 Underground Homes:

Underground earth-sheltered homes are built below ground level and typically feature a central, open atrium or courtyard to allow residents access to light and air. These homes have rooms that need heat like bedrooms and living rooms close to the centre to get the most heat.



2.2 Cost:

Basic Costs:

$45 per square foot 24' module (for construction of shell structure only) includes:

- footings
- shell structure (does not include floor, which is poured after plumbing,
- electrical, phone, ductwork, & outlets, and completed at owner's expense.)
- block-outs & arches in shell & footings
- labour for placement of vents, flues
- labour for installation of electrical conduit
- thermal break insulation as needed
- 28 ft. modules estimated at $50.00 sq/ft

Drafting costs:

- $300.00 per 24-square-foot module
- $350.00 per 28 square foot module
- to be paid at the time of Site Analysis

Waterproofing:

- Standard non-VOC waterproofing, applied at $2.25/square foot of surface area
    - Freight charges to be determined per job
- Premium waterproofing is available, apply at $4.25/square foot of surface area, which includes:
    - 10 mil membrane
    - Drainage mat & Protection Board
    - 10-year manufacturer's written warranty
- Travel costs are charged in addition to waterproofing charges.

Skylights:

- 6' octagon – $3,000.00
- 3' x 3' square – $2,200.00

Loop System(duct work):

- Installation of 6", sch40
- Installation of 8", sch40

Special Design Work:

- Our consulting time is based on $120 per hour.
- Engineering is required, charges will be per engineer's billing.
- Special design costs will be billed as incurred and due upon billing.

Travel Expense:

For construction that is 40 miles outside of the Construction area, the Owner will pay for:

- Motel accommodations for work crew (4-5 people)
- $30.00 per man per day meal allowance
- Moving and transport expenses will be determined per job.
- For out-of-state expenses, there will be additional costs determined accordingly

Design & Preliminary Construction Contract:

A preliminary drawing will be provided to the Client for his review and changes and will be returned to Downey Constructions for Final Plans to be drawn. Any changes to Final Plans will be made and billed at the rate of $120.00 per hour. All VA/FHA specification requirements will be billed at cost.

Consultation Cost:

Initial consultation for the preparation of the “working drawing” will be at no charge. Upon signing of the contract, six hours of technical consultation relative to the construction of the home will be provided at “no charge”; thereafter, a consultation will be billed at $120.00 per hour.

3.1 Materials needed:

Concrete:

Concrete is the most common choice for constructing earth-sheltered buildings. Not only is it strong, but it is also durable and fire-resistant. Precast reinforced concrete can resist loads at any reasonable depth and can be used for floors, walls, and roofs. Concrete absorbs and stores heat, helping to prevent temperature swings that can damage some building materials. Concrete can also provide supplemental strength in other types of earthen construction. For example, a concrete topping can be added to wooden roof planks, and cement “parging” (or coating) can be added to walls with masonry construction before waterproofing.

200-250 Bags of Cement will be needed.

Masonry:

Masonry (i.e., brick or stone) can be used for walls that will receive vertical or lateral pressure from earth cover. It is reinforced with steel bars that are put in the core of the masonry in places of high stress, such as weight-bearing walls or walls with earth against them. Masonry generally costs less than cast-in-place concrete.

16000-20000 Bricks will be needed.

Wood (Optional):

Wood can be used extensively in earth-sheltered construction for both interior and structural work including floors, roofs, and exterior walls. Although wood can cost less than other materials, it does not offer the strength that a material such as steel does, so it may not be the best choice for structural material in some houses.

Steel:

Steel is used for beams, bar joists, columns, and concrete reinforcement. It is particularly useful because of its high tensional and compressional strength. The primary disadvantage of steel is that it must be protected against corrosion if it is exposed to the elements or groundwater. Joint reinforcement or horizontal reinforcing bars may be required to reduce potential shrinkage cracking and meet certain code requirements.

2000-3000kg steel will be needed.

3.2 Sequence of Activities:

Activity	Time Required
Site Preparation	2 weeks
Excavation and PPC	4 weeks
Foundation	2 weeks
Plinth Beam	1 week
Superstructure-Column	1 week
Brick Masonry Work	3 weeks
Lintel work	1 week
Floor Slab	2 weeks
Door Window Framing	1 week
Electrical and Plumbing	1 week
Exterior Finishing	1 week
Terrace and Roof finishing	1 week
Internal Finishes	1 week
Woodwork	1 week
Waterproofing	1 week
Painting Work	1 week

Total time: 24 weeks or 6 months

3.3 Cost Estimate:

Thank you for considering our company for your earth-sheltered construction project. Based on the information provided, we estimate that the total cost of the project will be $150,000.

This estimate includes the following cost breakdown:

- Site preparation: $25,000
- Foundation: $30,000
- Materials: $50,000
- Labour: $30,000
- Finishes: $15,000

Please note that this estimate is based on the assumption that the site is ready for construction and that there are no unexpected issues that may arise during the building process. If any additional work is required, it may impact the final cost of the project.

We believe that our team is well-equipped to handle the unique challenges of earth-sheltered construction, and we are confident that we can complete the project to your satisfaction. If you have any questions or would like to discuss the estimate in more detail, please do not hesitate to contact us. We look forward to working with you on this exciting project.

4.0 Conclusion:

In conclusion, we believe that an earth-sheltered construction project has the potential to be a unique and cost-effective solution for your building needs. The energy-efficient design of these structures can help to reduce operating costs over time, and the underground location can provide additional protection from the elements.

We are confident that our team is well-equipped to handle the unique challenges of earth-sheltered construction and that we can complete the project to your satisfaction. Our team is dedicated to delivering high-quality workmanship and exceptional customer service, and we look forward to the opportunity to work with you on this exciting project. Thank you again for considering our company, and we hope to have the opportunity to serve you.