

Successful Geothermal Project Analysis – Geothermal in Rental Buildings and Condos



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TODAY'S AGENDA

- About Collecdev
- Benefits of Geothermal
- Geothermal Industry Growth
- Geothermal in Condos and Rental Buildings
- Project Case Studies

COLLECDEV MISSION

“Collecdev is a visionary development company **dedicated to building better communities**. The firm champions an integrated approach throughout the development process and is committed to being at the forefront of sustainable building practices while maintaining uncompromising standards of quality.

Collaborating with industry leaders in all disciplines, the company takes pride in advancing innovative ideas, resulting in a collective vision. Collecdev communities are designed to create balanced and complete communities that reflect the way people truly want to live”.

COLLECDEV VISION

SOCIAL SUSTAINABILITY

Building communities that anticipate the future while balancing today's needs is the cornerstone of Social Sustainability. It entails a constantly evolving outlook on spaces that integrate diverse programmatic elements, stimulating conversation and provoking new ideas for healthy, balanced environments. Beyond the individual buildings and their associated amenities, we take responsibility to ensure that we layer community services and facilities to create a thriving sense of place. We advance housing initiatives that are accessible to all and ensure private and public spaces are designed to enrich society as a whole.

EXPERIENTIAL DESIGN

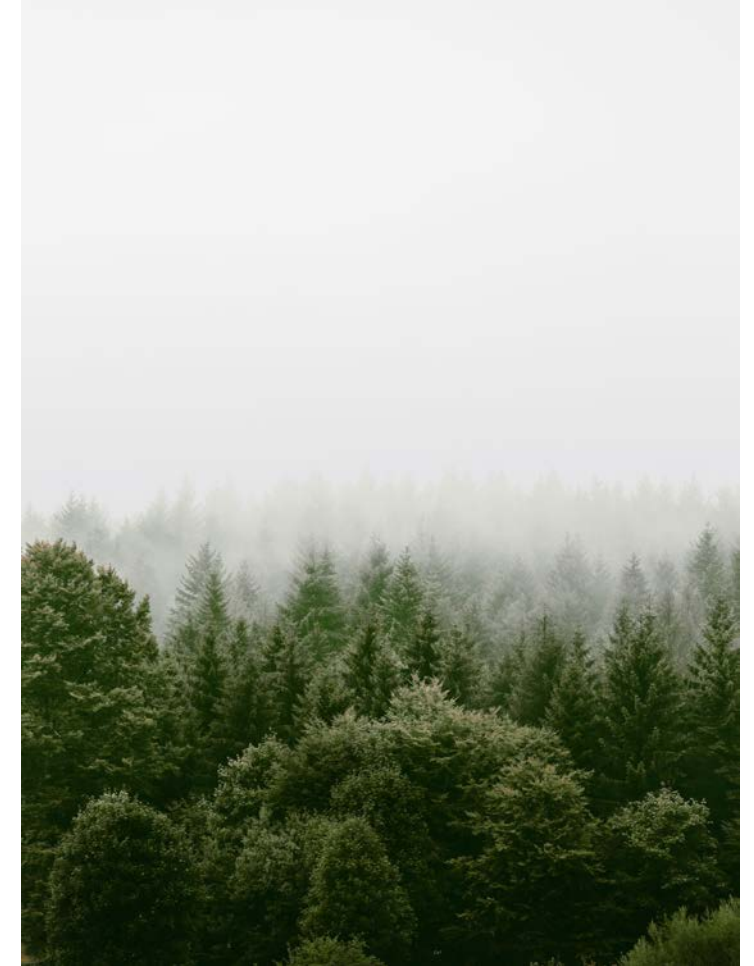
Understanding the wants and needs of our homeowners is essential to creating the ultimate living experience. As such, we apply a diligent approach to designing every element our communities, from macro to micro, through an iterative process where the small details inform the big moves, and vice-versa. We give careful consideration to both the existing contexts in which we build, and to the intimate living spaces in the communities we create. Striking a balance between form and function is our ultimate goal. We take every precaution to ensure that our projects are future-proofed. The result is a human-centred, multi-layered design approach that welcomes families' home.

ENVIRONMENTAL STEWARDSHIP

At Collecdev we acknowledge an inherent responsibility over the impact of communities on the natural and built environment. The unprecedented rate of urbanization demands a forward-thinking approach in order to build long-lasting balanced urban landscapes. This is achieved through the careful consideration and implementation of advanced building technologies and alternative energy sources. Various initiatives to reduce the carbon footprint of our communities are executed in order to realize one of our primary objectives. Collecdev's investment in Environment Stewardship is a fundamental part of developing communities that ensure a better tomorrow.

ENVIRONMENTAL BENEFITS OF GEOTHERMAL

- Lowers greenhouse gas emissions by 70 percent over traditional heating and cooling systems.
- Saves over 5 million litres of water per year.
- A geothermal system can cut annual energy costs for an entire building by 30 to 60 percent. Since no fossil fuels are burned, maintenance and operation costs are lower, and with a fixed 30-year agreement (that includes a performance guarantee and predictable costs), residents will enjoy lower monthly maintenance fees.
- Geothermal is reliable as the technology works through every season. Pumps can simultaneously cool one part of the building while heating another, giving residents full control over their own space.



UNEXPECTED BENEFITS

- The reduced upfront cost due to the elimination of expensive boilers and large cooling towers.
- The opportunity to turn rooftop space into penthouse suites, roof top gardens and other valuable amenities.
- The increase in appeal of higher-floor units that are no longer located in close proximity to the loud traditional equipment typically located in the mechanical penthouse.



Tretti Condos

SCALE IS IMPORTANT

- Geothermal is not a “one size fits all” solution, it is simply a tool in the toolbox.
- Size of site vs GFA of building.
- Tall and narrow buildings, and small landlocked sites may not be perfectly suited for a system.
- Scale is important, Geothermal players typically prefer to work with buildings that have large area for a borefield and sites that have 80,000 sq.ft. or more for the economics to make sense for the utility model.
- Geothermal technology, no project is too small.



Nordic Condos

CONSTRUCTABILITY

GEOHERMAL IMPACTS ON CONSTRUCTION

- Coordination of construction activities – demolition, shoring etc.
- Typical durations.
- Analysis of soil conditions – overburden.
- Consideration for the costs of water supply, discharge and spoil removal during the drilling phase.
- Avoid borehole failures by verifying geodetic elevations of footings and structure, capping the loop at an appropriate height.
- Location of mechanical pump room.



Geothermal drilling rig at site of Nørdic Condos

CONDO VS. RENTAL

CONDO

- Occupancy rates are protected as building operators recognize the value of green buildings and the direct impact on tenant quality, retention and return on investment, ultimately driving up property value.
- The initial capital expense of geothermal systems can be minimized and recaptured through a utility contract model which both the homeowner and developer benefit.
- Displacing traditional systems have the added benefit for expensive residential units located at the top of the building. These units are no longer close to the loud traditional equipment located in the mechanical penthouse.

RENTAL

- Long term NOI (Net Operating Income) will be optimized by introducing a geothermal system. This is a large upfront fee that will benefit over the years and allow for predictable monthly fees.
- Rental building (commercial and residential) developers who introduce geothermal acknowledge increased tenant retention as a result of predictable monthly fees.
- Introducing a cooling tower with traditional systems is extremely heavy and can impact construction costs negatively due to requirements for added floating floors, bulkheads, suite layouts etc., without these systems developers and structural engineers no longer have to take this expensive route.

BENEFIT FOR OUR PURCHASERS

As Collecdev purchasers are now occupying suites, they are becoming more educated on the benefits of living in a geothermal building and realize the following 3 main benefits:

1. **Reserve Fund**: No need for a reserve fund contribution for a traditional mechanical system such as cooling towers and additional boilers.
2. **Government Subsidies**: There are plans for the government to remove subsidies on hydro and gas. (if you own a conventional system, the rates are subsidized by the government, however once these fees are no longer subsidized it will adversely impact the condo budget).
3. **Insurance**: Insurance premiums are less as we are not insuring equipment and the borefield is owned by the Geothermal Utility Provider.



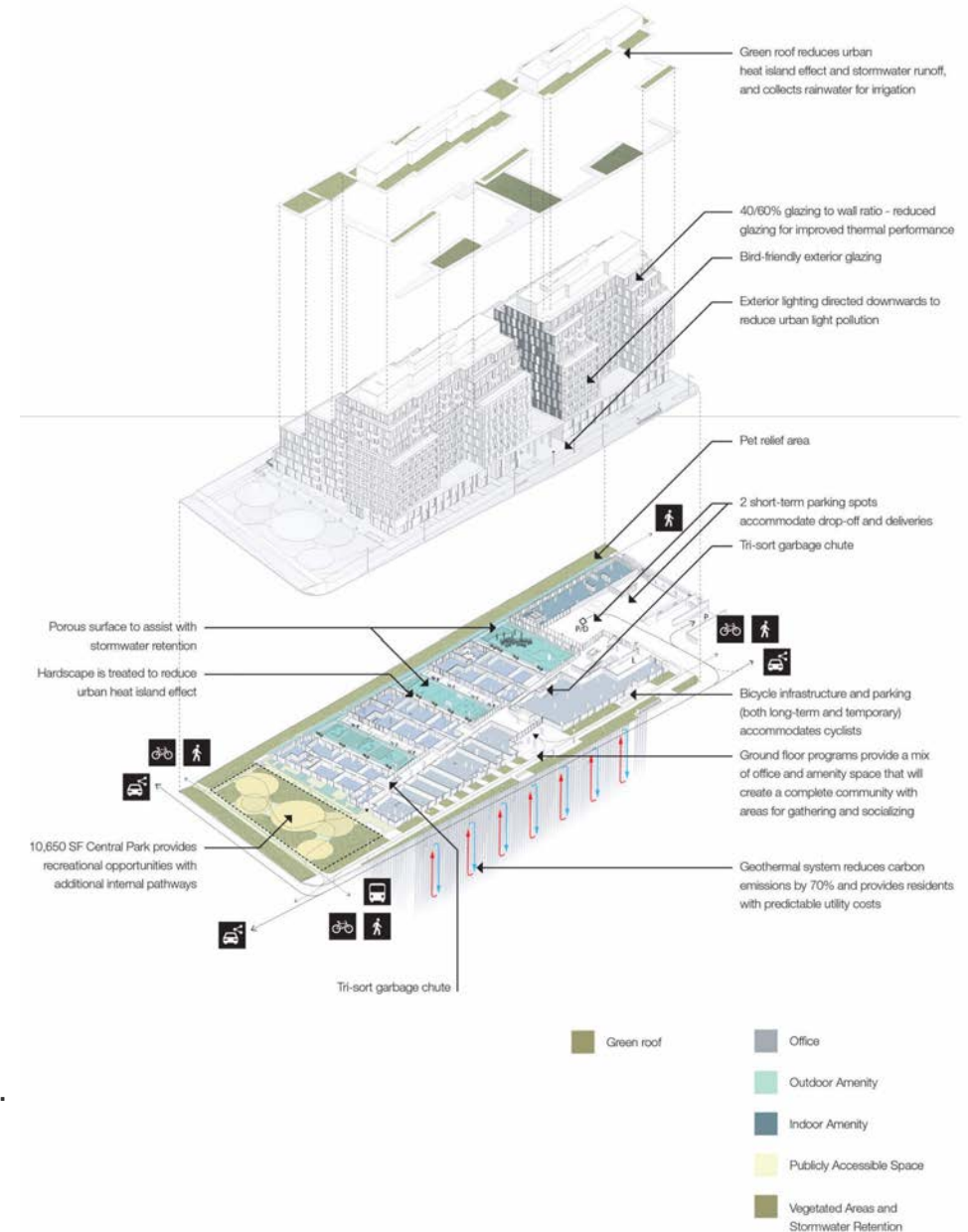
Westwood Gardens

GEOHERMAL INDUSTRY GROWTH

GEOHERMAL INDUSTRY IS EXPECTED TO DOUBLE IN THE NEXT 3 YEARS.

For the Following Reasons:

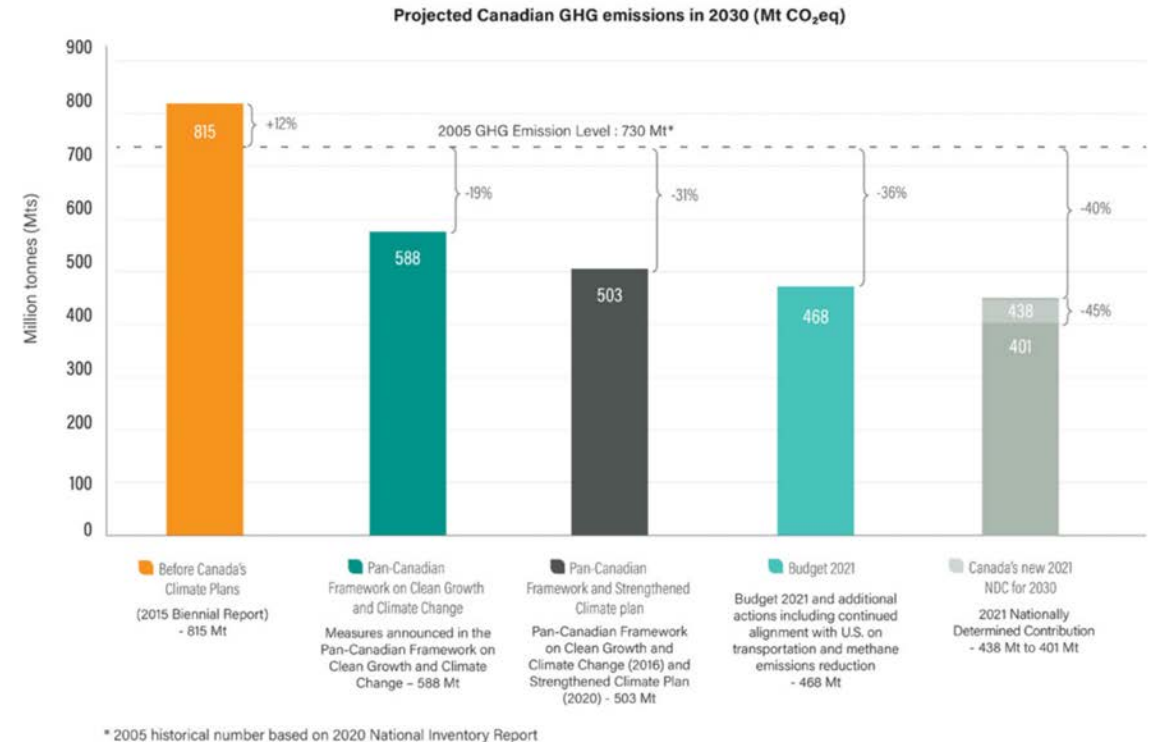
- Increased number of players within the industry – the market is increasing at an accelerated rate.
- Industry is becoming more specialized.
- Increased activity, availability of labour.
- Toronto's Net Zero Strategy 2040 – all new buildings are required to have zero carbon emissions by 2040.
- Increased environmental standards for buildings
 - Historically the construction industry is slow to change, early adaptors (like Collecdev) have proof of concept, shifting the market for increased growth.
 - Environmental sustainability and economic profits are no longer mutually exclusive.



CANADA'S CLIMATE PLANS AND TARGETS

- Canada's Net-Zero Strategy 2050 – The act which became law on June 29, 2021. We are planning projects today that will need to comply and implement a major overhaul of mechanical systems in a traditional building.
- Emissions Reduction Plan 2030 – to achieve 40-45% emissions reductions below 2005 levels by 2030.
- Canada's climate actions for a Healthy Environment and a Healthy Economy – phasing out traditional coal-fired plants and embracing renewable energy, improving building codes and standards so homes and buildings use less energy, and investing in Made-in Canada technologies and clean solutions.

<https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050.html>



GEOHERMAL & MUNICIPALITIES

- Like most utilities the physical activity of drilling is not governed by any specific permit, although the municipality will perform a review of the mechanical system.
- Toronto Green Standards (TGS) is working to command more of developers.
- TGS Tier 2, Version 3, cannot be met without Geothermal or other alternative energy systems.
- The City of Toronto has developed an ESG Report that will help raise awareness around sustainability initiatives.
<https://www.toronto.ca/legdocs/mmis/2022/ex/bgrd/backgroundfile-175122.pdf>
- Toronto is the only City in North America that is developing ESG Initiatives.



Nørdic Condos Courtyard

WESTWOOD GARDENS

Category: Condo Ownership

Status: Occupancy Phase

Address: 8868 Yonge Street, Toronto

Storeys: 15/15

Units: 370

Architect: Kirkor Architects and Planners

Mechanical Engineer: Smith + Anderson

Geothermal Operator: Diverso Energy

Geothermal Driller: GeoSource Energy Inc.

Number of Boreholes: 144

Depth of Borefield: 600ft.

Awards & Accolades:

2018 BILD Best Innovative Suite Design - Winner

2018 CHBA Best Brochure - Finalist

2018 NAHB Best in Green Sales & Marketing

Strategy - Winner

2018 NAHB Best Marketing of Green/Sustainable Program - Silver Winner



TRETTI & TIPPETT PARK

Category: Condo Ownership and Purpose-Built Rental

Status: Under Construction

Address: 30/18 Tretti Way, Toronto

Storeys: 13/16

Units: 340/177

Architect: gh3*

Mechanical Engineer: MCW Consultants Ltd.

Geothermal Operator: Diverso Energy

Geothermal Driller: GeoSource Energy Inc.

Number of Boreholes: 104

Depth of Borefield: 800ft.

Awards & Accolades:

2020 BILD Project of the Year – Finalist

2020 BILD People's Choice Award – Finalist

2020 BILD Best High-Rise Building Design – Finalist

2021 NAHB Best Landscape of a Community – Silver Winner

2021 NAHB Best Email Marketing – Silver Winner

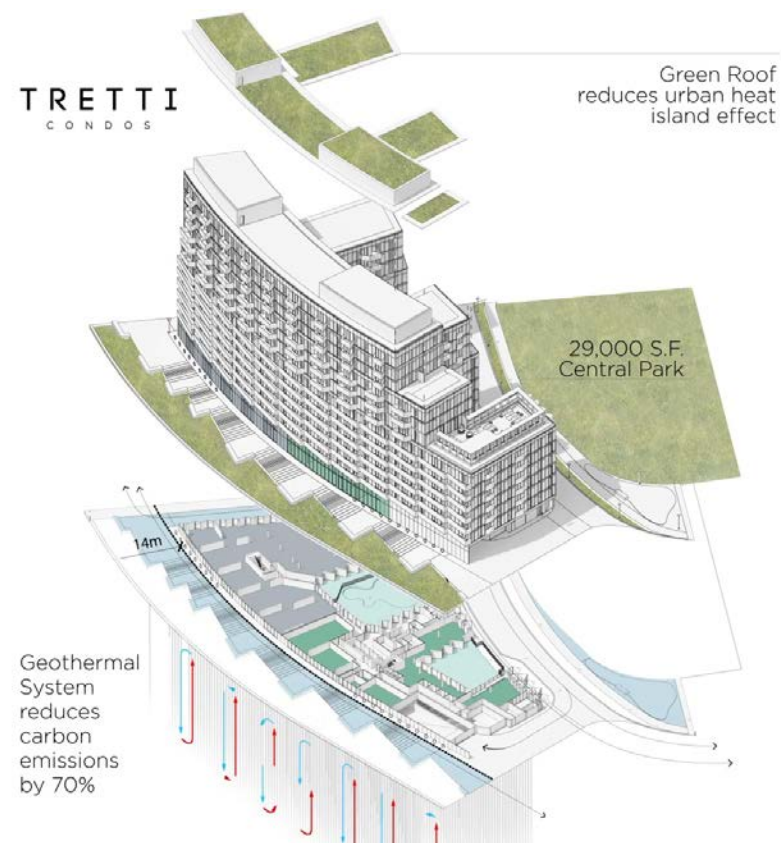


Tretti Condos



Tippet Park Phase 2

TRETTI CONDOS GEOTHERMAL SYSTEM



NØRDIC CONDOS

Category: Condo Ownership/Purpose-Built Rental

Status: Under Construction

Address: 500 Wilson Avenue, Toronto

Storeys: 12/12

Units: 437/160

Architect: gh3*

Mechanical Engineer: MCW Consultants Ltd.

Geothermal Driller & Operator: GeoSource Energy Inc.

Number of Boreholes: 115

Depth of Borefield: 850ft.

The borefield was installed at the same time as existing building demolition.



Awards & Accolades:

2021 BILD Best Advertising Campaign (Paid Media) - Winner

2021 NAHB Multifamily Community of the Year – Finalist

2021 NAHB Best Print Campaign – Finalist

2021 NAHB Best Email Marketing – Finalist

2020 OHBA Project of the Year – Winner

LILLIAN PARK

Category: Purpose-Built Rental

Status: Complete and Operational

Address: 44 Lillian Street and 33 Dunfield Avenue, Toronto

Storeys: 25,26

Units: 564

Architect: Rafael + Bigauskas Architect

Mechanical Engineer: Smith + Anderson

Geothermal Operator: Diverso Energy

Geothermal Driller: GeoSource Energy Inc.

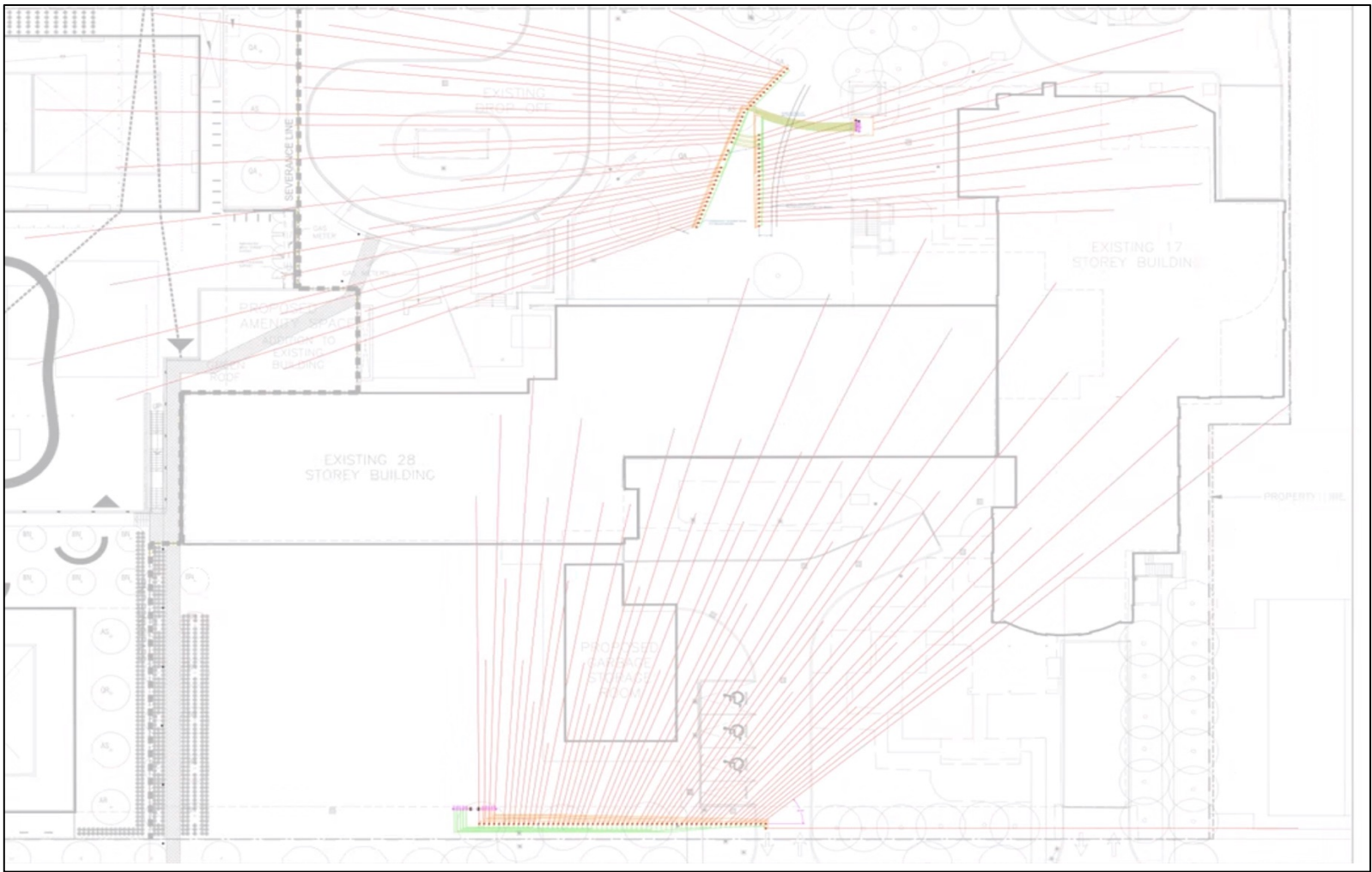
Number of Boreholes: 120

Depth of Borefield: 800ft.

- This project is an example of an angular drilling method using existing land area.
- Retrofit of an existing neighbouring 17-storey building



LILLIAN PARK – ANGULAR DRILLING



2021 BEST OF THE BEST

Collecdev is honoured to receive recognition with the 2021 Best of the Best Award Winner in the category of **Green Building Culture Award** from the **Toronto Construction Association**. The Green Building Award is presented annually to the TCA member firm that best demonstrates a corporate green building "culture" in terms of how they conduct their day-to-day business. The recipient will be an industry leader whose actions inspire environmental sensitivity and encourage a green building culture.

With Environmental Stewardship as one of our three key company pillars (alongside Social Sustainability and Experiential Design), we acknowledge an inherent responsibility over the impact of our communities on the natural and built environment and strive to implement a forward-thinking approach that reduces the carbon footprint of our developments and results in long-lasting, balanced urban landscapes.



THANK YOU

