GORDON RIVER CITY PARK
PERMITTING SCHEDULE

	TIME (MONTH)												**Est. Fees**
Activity	1	2	3	4	5	6	7	8	9	10	11	12	
Upfront Engineering													$9,000
• Update survey, pre-application meetings, hard lining concept plan, upfront work	X	X											
SFWMD (water management and wetland impacts)													$43,000
• Coordinate on Final Plan		X											
• Prepare final pathway, parking and drainage design		X	X										
• Prepare preliminary engineering bridge design		X	X										
• Prepare supporting application documentation		X											
• Submit ERP Application			X	X									
• RAI and Sufficiency					X	X	X	X					
• Permit									X				
Corps of Engineers (wetland impacts)													$35,000
• Prepare application	X	X											
• Submit application and sufficiency		X	X										
• Public Notice/Review				X	X	X	X	X	X				
• Permit approval									?	?	?	X	
Coast Guard Permit (bridge)													$6,000
• Prepare application and plans					X								
• Submittal and follow up						X	X						
• Permit issuance after COE Permit												X	
FAA Permitting (bridge)													$3,000
• Prepare application and plans					X								
• Submittal and follow up						X	X						
• Permit issuance after COE Permit												X	
City of Naples (DRB and site permitting)													$7,000
• Prepare detailed plans			X	X									
• Prepare DRB application					X								
• Submit application and plans					X								
• DRB review						X	X						
• Utility and Site Approval							X						
												Total:	$103,000

Includes biologist fees but does not include agency review fees (est of $4,500 (not incl City fees)).

MHK
ARCHITECTURE
& PLANNING

Naples Gordon River Park

From the Desk of Bill Barton

605 Palm Circle East
Naples, FL 34102

239-641-7941 cell
239-262-0334 fax
billbarton39@comcast.net

March 4, 2014

Subject: Gordon River Park Conceptual Plan

To Whom It May Concern:

The current Gordon River Park conceptual plan prepared for the City of Naples by Mathew Kragh, AIA incorporates an approximately 40 foot high earthen embankment supporting an observation area. I understand that the finished structure will be approximately 110' across at it's top level, and approximately 250' across at it's base, resulting in a side slope of approximately 1.75:1 (30 degrees). The conceptual plan employs the use of a combination of terracing and varying heights of retaining walls to contain/stabilize the embankment area(s).

The question posed to undersigned was "in my professional opinion can such embankment be designed and constructed using typical, standard practice design/construction techniques to provide a safe and stable feature in the proposed park"? The short answer to that question is an unequivocal YES.

It is supposed that my opinion was sought knowing that I have, during my 40 year professional career as a registered professional engineer, designed hundreds civil engineering projects in SW FL that included significant embankment and the requisite incorporation of erosion control techniques.

There are multiple design techniques that can be effectively used to control storm water runoff erosion from an embankment of any height. A few of those would include:

- Terracing (as depicted in the concept plan)
- Use of vertical retaining walls (also depicted in the concept plan)
- Use of plant materials having strong effective root systems
- Efficient removal of surface water
- Effective removal of subsurface water using underdrain systems
- Erosion control hydro sprays
- Erosion control mats
- Soil reinforcement

When vertical retaining walls are employed, the concern for erosion is removed, although dewatering the retained soils often is desirable.

One need only travel to the intersection of Golden Gate Parkway and Airport Road to observe the use of embankment contained by retaining walls. Collier County was constrained by insufficient land area to employ sloped embankments, hence the use of approximately 25' high side walls. Also, by viewing the I-75 interchanges at Golden Gate Parkway or Pine Ridge Road one can observe the approximately 30 high sloped embankments constructed by FDOT. And, it will be noticed that the embankment slopes are approximately 1:1, or 45 degree angle, much steeper than those proposed in the Gordon River conceptual park design.

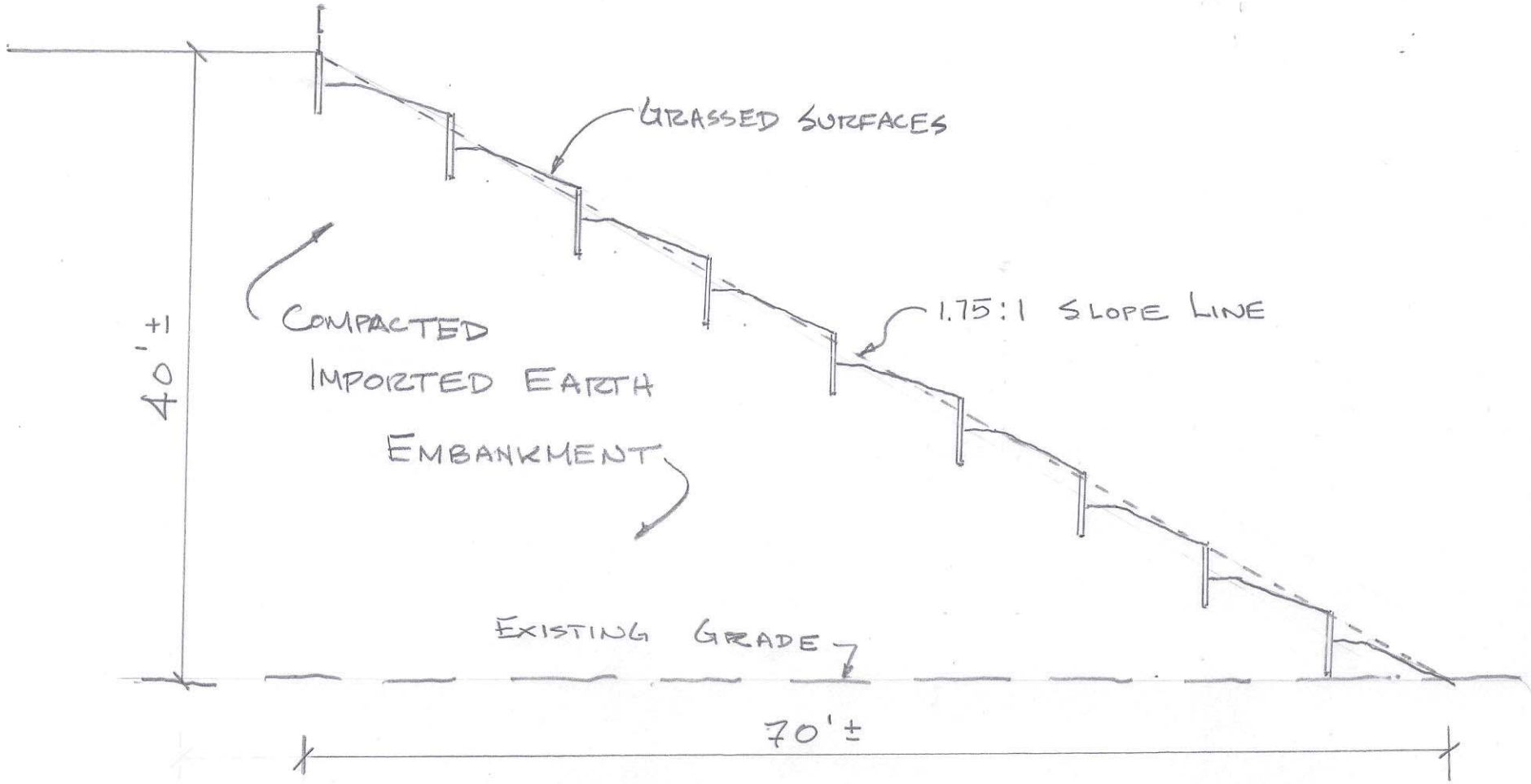
It should be noted that the park embankment, at it's 40' high point, will place approximately 4,000 pound/SF of load on the existing site surface, so an important aspect that the project design engineer will investigate and analyze is the condition of the existing subsoil in the embankment area. Once subsurface conditions are known the engineer can then determine if sub-surface stabilization techniques are required, or he (she) may advise that pre-loading the site is the better option. Once again, if site conditions warrant subsoil densification, that can be achieved employing standard frequently used techniques.

The attached sketches display one of an infinite number of design techniques that can be employed in an embankment of the size envisioned on the Kragh concept plan. Note that by using a series of small (2 ft. high) retaining walls the slope can incorporate level areas and shallow (3:1) slopes, providing safe, easily maintained side slope areas. Also note the inclusion of "channel drains" which can be a cost effective means of removing surface water, which of course is the primary cause of slope erosion.

I trust that the above is of some value in the ongoing analysis of the Gordon River Park design concpt.

Respectfully,

William L. Barton
FL P.E. 10457



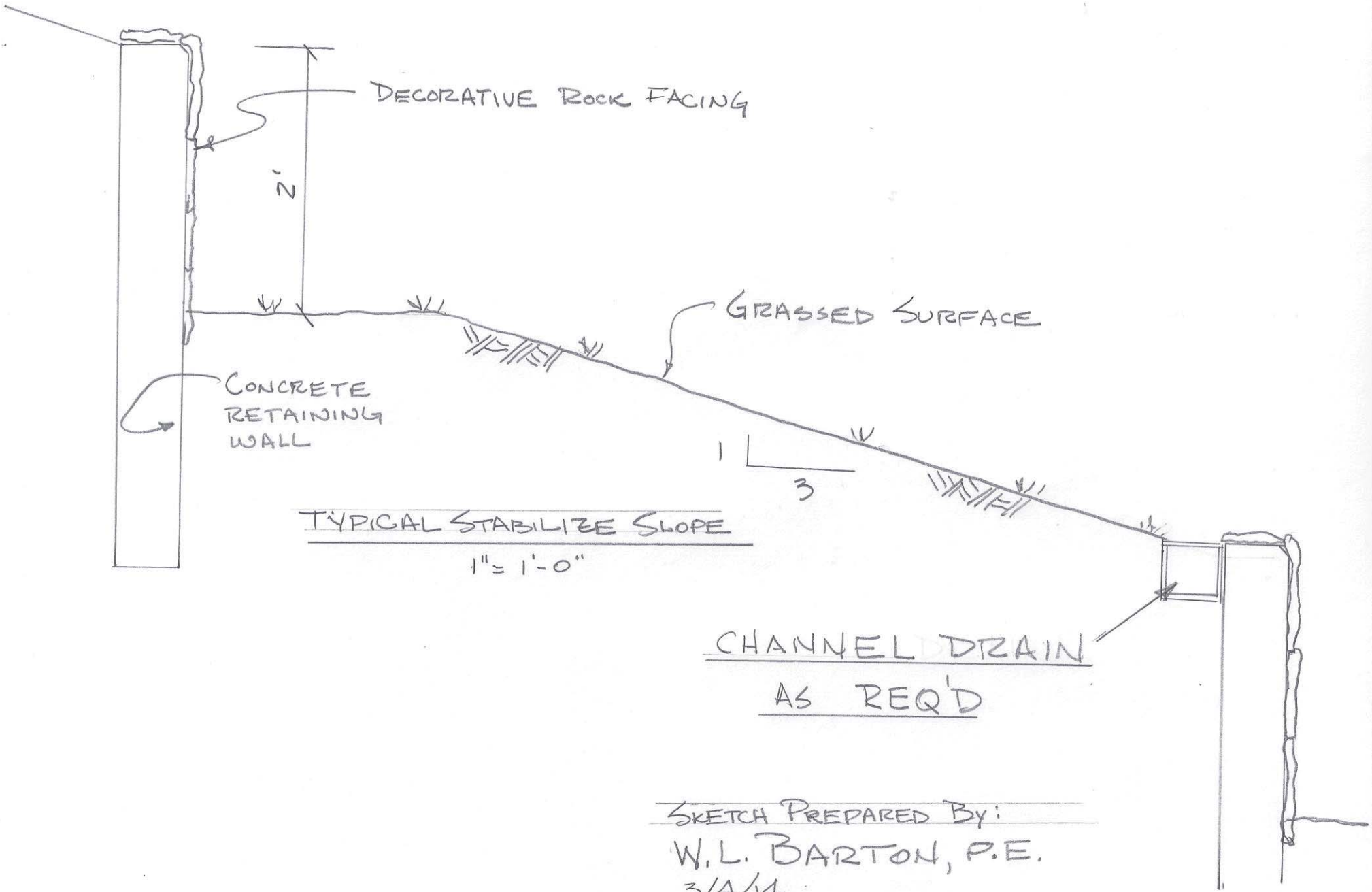
TYPICAL STABILIZED SLOPE

1" = 10'

SKETCH PREPARED BY:

W.L. BARTON, P.E.

3/4/14



TYPICAL STABILIZE SLOPE

1" = 1'-0"

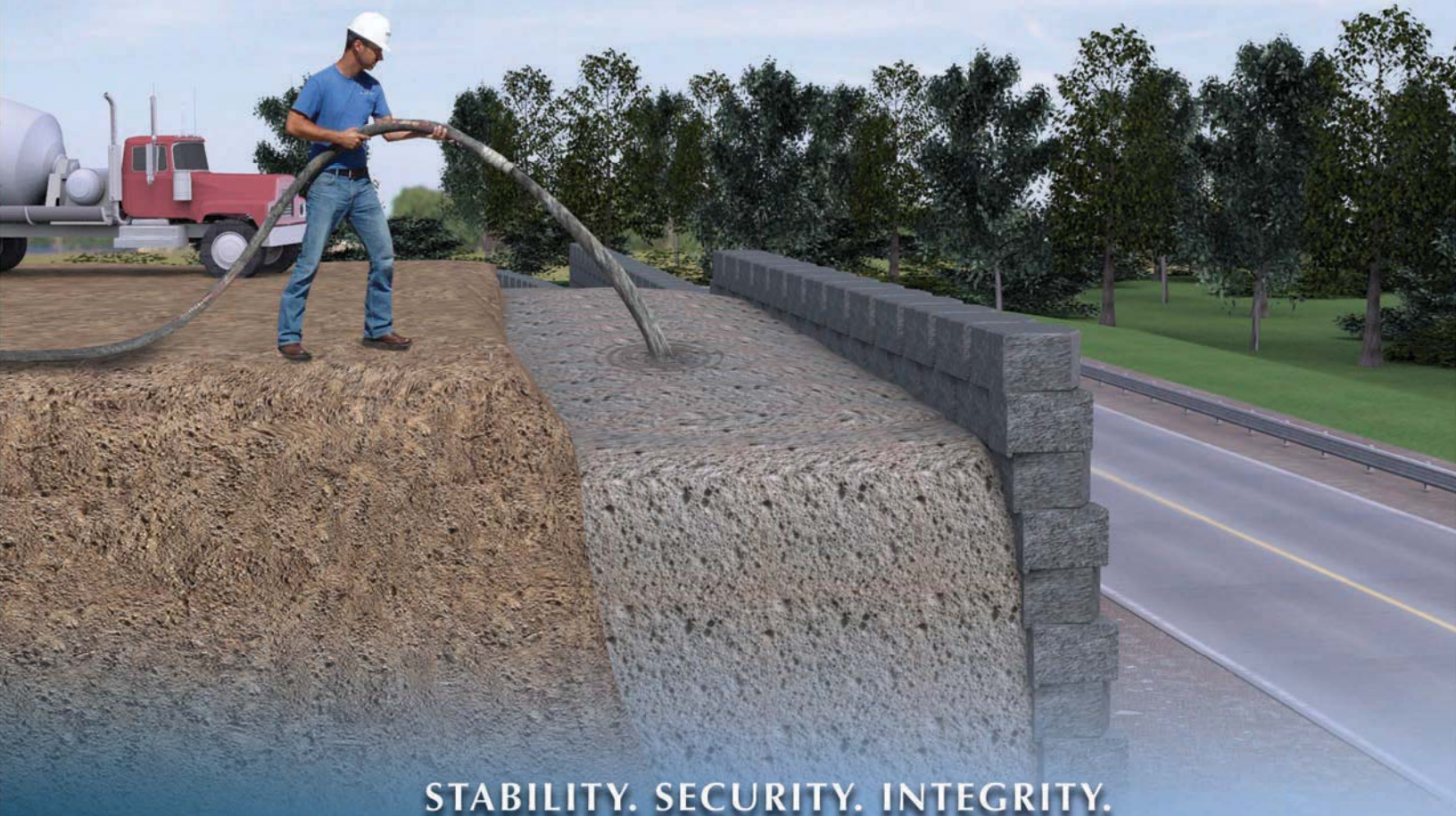
SKETCH PREPARED BY:

W. L. BARTON, P.E.

3/4/14

FOUNDATION SUPPORTWORKS®

STABLEFILL™ CELLULAR CONCRETE



STABILITY. SECURITY. INTEGRITY.

Foundation Supportworks® manufactures a complete line of geotechnical and foundation stabilization products for use in residential, commercial, industrial and municipal applications throughout the world.

STABLEFILL™

PN #MBSFC

About FOUNDATION SUPPORTWORKS®


Omaha, Nebraska


Seymour, Connecticut

Foundation Supportworks® (FSI) is a leading manufacturer of helical pile systems, hydraulically-driven push pier systems, earth retention systems and geopolymer stabilization systems. FSI was founded on the principles of ***integrity, quality*** and ***service*** and it is our mission to provide the industry with innovative solutions that are appropriately designed and tested, expertly installed and dependable to perform as promised.

Foundation Supportworks' commitment to its network of installing contractors and, ultimately, the end consumer, is apparent by employing a team of customer service and dealer support staff unparalleled in the industry. Our staff of full-time employees includes a professional corporate trainer, geotechnical and structural engineers, and entire graphics and website development departments.

With major dealer support facilities in Omaha, Nebraska and Seymour, Connecticut, Foundation Supportworks® operates with a long-term vision.

ENGINEERING

Foundation Supportworks® has both geotechnical and structural engineers on staff for product design, quality assurance of products and support to our network of installing contractors. Our in-house engineers are available to assist with preliminary designs and provide technical support to engineers, architects, building departments and general contractors. Our engineers are experts in the industry and routinely present technical information at industry trade conferences, engineering and architectural meetings and conferences, as well as to contractors and home inspectors.

STABLEFILL™


Preformed foam is infused into grout slurry to produce StableFill™

StableFill™ Cellular Concrete is a lightweight material made by replacing some or all of the stone aggregate used in standard concrete with uniform air cells (voids). These air cells are created by blending foaming agents into the concrete during the mixing process, and can be managed to produce an engineered geotechnical material. Its density can be varied from 20 to 120 lbs. per cubic foot, and its compressive strength from 20 to 3000 psi. Geotechnical applications include load-reducing fill, backfill for tunnels and retaining walls, annular grouting for tunnels, fill for bridge approaches, and fill for sinkholes and abandoned underground tanks, pipelines and mines. StableFILL™ can be produced in both a pervious and non-pervious blend.

- **StableFILL™ Non-Pervious:** A lightweight concrete that can be used for replacement of unstable soils, density controlled load relief, void fills, behind retaining walls and abandonments, and similar Geotechnical applications.

- **StableFILL™ Pervious:** A synthetic foaming agent which, when added to engineered cement slurry, enables the production of pervious cellular lightweight concrete. This permeable, open-celled, low-density concrete is able to stabilize soil without disturbing or redirecting natural water flow. StableFILL™ Pervious provides proven geotechnical solutions for applications requiring drainage capacities exceeding those obtainable from compacted soil or controlled low strength material.

STABLEFILL™

TECHNICAL INFORMATION

FOUNDATION SUPPORTWORKS

STABLEFILL™ STRENGTH / DENSITY CHART

These material weights and measures are for one individual cubic yard of StableFILL. Multiply these amounts by the number of cubic yards you wish to batch for your project

TYPICAL NEAT CEMENT (NO SAND) MIXES

The following chart illustrates the various typical properties of **Weight Density** (lb./c.f.), **Compressive Strength**, (psi), and **Thermal Conductivity** values attainable with various volumes of preformed foam additions to Neat Cement Mixes.

Wet Cast Density lb /ft³	Dry Density lb/ft³	Compressive Strength* (28 Days) lb/in²	"k" Thermal** Conductivity Btu in/h ft² °F	Portland Cement lbs/yd³	Foam Volume Ft³/yd³
20	16	50	0.54	328	22.7
25	20	80	0.60	420	21.5
30	25	140	0.67	512	20.3
35	29	210	0.76	603	19.1
40	34	330	0.87	695	17.9
45	38	450	0.98	787	16.7
50	43	640	1.06	878	15.5
55	47	790	1.20	970	14.3
60	51	930	1.33	1062	13.1

Typical Mix Designs illustrated above are based on a water/cement Ratio of 0.50
Method of ASTM C 495 used for compressive strength testing of Lightweight Insulating Concrete

Actual properties will depend on cement used, curing conditions and other variables as dictated by job conditions.

* The compressive strengths shown are approximate. As with ordinary concrete, the strength at any given density and mix proportion will also vary with the type of cement and the final water content of the mix. Substantial increases in strength will result by reduction of the w/c ratio, such as is possible with efficient mixing equipment and by curing in low-pressure steam. Other admixtures such as foam compatible dispersing agents and water reducing agents may contribute to strength success.

** Reference: National Bureau of Standards Data from "Insulating Concretes", ACI Journal (Nov. 1956)

STABLEFILL™

ADVANTAGES

- Environmentally safe
- No Flash point
- Lightweight
- Insulating; excellent freeze-thaw resistance
- High slump (virtually self-leveling); positive fill
- Rapid installation
- Long lasting and stable
- Absorbs shock waves
- Broad range of densities and compressive strengths
- Reduces hydrostatic pressure on retaining walls

StableFill™ is virtually self-leveling

Rapid Installation - can be installed in up to 20' lifts

FOUNDATION SUPPORTWORKS

STABLEFILL™

Installation Process

STEP 1

Mix is designed for specific application.

STEP 3

Material is tested to verify appropriate density and strength.

STEP 2

Site is arranged and equipment is prepared.

STEP 4

Material is placed through pump or gravity.

STABLEFILL™

Geotechnical Applications

- Annular grout for tunnels, water and sewer lines
- Tunnel arch backfills
- Tunnel backfill and annular fills
- Soil stabilization
- Fill underground tanks and pipelines
- Tremie applications
- Bridge approach and landslip repair fills
- Impact absorption
- Retaining wall backfills

Annular grout for tunnels, water and sewer lines

Bridge approach and landslip repair fills

Ground improvement for building structures

Authorized Dealer of FOUNDATION SUPPORTWORKS

STABLEFILL™

MHK ARCHITECTURE & PLANNING

City of Naples Gordon River Park

Joe Tucker 643-4747

MACTEC

RECEIVED
JUL 2 2 2004
ENGINEERING

July 20, 2004

Mr. Ron Wallace
CITY OF NAPLES - ENGINEERING
295 Riverside Circle
Naples, Florida 34102
(239) 213-5000

Subject: Preliminary Geotechnical Evaluation
PROPOSED PULLING LANDING PARK
Goodlette-Frank Road
Naples, Collier County, Florida
MACTEC Project 6787-04-4060

Dear Mr. Wallace:

MACTEC Engineering and Consulting, Inc. (MACTEC), is pleased to submit this preliminary evaluation of geotechnical conditions at the subject site. Our services were performed in accordance with MACTEC Proposal MIAM-04-39 dated January 19, 2004, and authorized by you on April 30, 2004.

This report is intended for the use of the City of Naples, under the contractual terms of our Proposal. Reliance on this document by any other party is forbidden without the express written consent of MACTEC, and that party's acceptance of mutually agreeable terms and conditions consistent with those on our Agreement for Secondary Client. Use of this report for purposes beyond those reasonably intended by the City of Naples and MACTEC will be at the sole risk of the user.

Project Information

The subject site is east of Goodlette-Frank Road, near Central Avenue, within the City of Naples. The site is located east of Riverside Drive near the existing City of Naples Solid Waste Division facility. The site lies on the west bank of the Gordon River. The site was previously used as a landfill; the northern portion of the site was reportedly excavated down to bedrock and backfilled with horticultural waste, and the southern half may have been randomly filled with unknown constituents. The City proposes to make a park at the site and requested we evaluate potential soil and ground water

contamination from the buried waste on the site, and provide preliminary geotechnical information for use in planning on-site features. Our environmental assessment was provided under separate cover.

Field Observations

MACTEC observed excavations at twelve test pits, as part of an environmental assessment program at the site. The test pits were excavated with a trackhoe to depths of approximately 16 to 18 feet below land surface (bls), or to the apparent vertical extent of buried material. Eighteen feet was the practical limit of excavation. The test pit observations indicate that buried waste, composed primarily of organic horticultural waste (including shredded wood or mulch, roots, tree trunks, branches and coconuts), is present over most of the site. Lesser amounts of plastic sheeting were also present in most pits. The depth, quantity and thickness of debris varied with location. The deepest debris extends to a depth of 18 feet or more. One pit (Pit 4) contained a significant amount of construction debris. Relatively small amounts of trash were unearthed, usually from deeper strata. No drums or petroleum/chemical containers were observed in the excavated material.

A soil gas survey was performed by measuring hydrocarbon vapors with an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). The soil screening indicated that methane was present in soil in nearly all tested locations. In most locations the methane concentrations exceeded 1000 parts per million (ppm), which was the upper limit of the instrument's readout scale. Another instrument with a greater measurement capacity would be necessary to further quantify methane concentrations.

Preliminary Recommendations

The Florida Department of Environmental Protection (FDEP) published a guidance document titled *Guidance for Disturbance and Use of Old Closed Landfills or Waste Disposal Areas in Florida.* If the site will be disturbed beyond simple structures, paving, and landscaping, consideration should be given to using this document as guidance during future development of the site.

The buried waste presents geotechnical issues regarding site development and construction. Based on the OVA screening and experience with other properties in the area, we expect relatively high levels of methane gas over most of the site. Under certain circumstances methane gas may accumulate in structures to explosive or ignitable levels. Therefore, methane is a concern for potential structures on

the property. We understand the buildings proposed for the site are small non-enclosed structures, such as gazebos and restrooms. We recommend that the restrooms are well ventilated. If enclosed buildings may be constructed in the future we recommend construction include methane mitigation measures, both during construction and for any proposed enclosed buildings. In addition, impervious surfaces such as paved parking lots can trap landfill gases, resulting in pavement defects (e.g., raised areas or "bubbles"). If impervious paved areas are planned, a sub-base gas relief system such as perforated pipes, vented to the edge of the pavement, should be considered.

The main geotechnical engineering concern for support of slabs-on-grade and/or asphaltic concrete pavement sections for parking or driving areas is the compressibility of the underlying organic material. This material is highly compressible and will undergo settlement under even lightly applied loads such as landscaping fill.

It is understood that the finished grades will generally coincide with the existing grading. In order to effectively negate detrimental effects from the organic material on slabs and/or pavement, a complete undercut and replacement of the organic material and/or preloading (surcharging) the pavement area would need be properly performed. However, if some periodic pavement maintenance (such as possible patching and/or pressure grouting) and aesthetic disruptions are considered to be acceptable (such as "birdbaths" and/or slight pavement cracking), the pavement can be supported with no special site preparation procedures.

In order to reduce the potential for damaging differential settlements, a synthetic geogrid system may be used. While this reinforcement would not significantly reduce the possibility for overall soil settlements, it would help to bridge over weaker areas, resulting in a more uniform settlement. Small, lightly loaded floor slabs (gazebo, restrooms, etc.) can also be designed with additional reinforcing steel to reduce the possibility of cracking.

Basis For Recommendations

The preliminary recommendations provided are based in part on project information provided to us and they only apply to the specific project and site discussed in this report. If the project information section in this report contains incorrect information or if additional information is available, you should convey the correct or additional information to us and retain us to review our recommendations. We can then modify our recommendations if they are inappropriate for the proposed project.

Regardless of the thoroughness of a geotechnical exploration, there is always a possibility conditions between borings will be different from those anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. We recommend that the owner retain MACTEC to provide this service based upon our familiarity with the project, the subsurface geotechnical conditions and the intent of the recommendations and design

We appreciate the opportunity to provide our professional services for this project. Please contact us if you have questions or if we may be of further assistance.

Sincerely,

MACTEC Engineering and Consulting, Inc.

Dennis F. McCoy, P.E. 7.21.04
Senior Engineer
Florida Registration 54834

Jo C. Tucker, P.E.
Principal Engineer
Florida Registration 46950

by CJS with permission

Attachments
Observation Logs
Figure

Test Pit Observation Logs
Date of excavation: 5/12/04

PIT 1

Depth (feet)	Description
0 – 1	Sand and top soil
1 – 3	Yellowish lime sludge and plastic
3 – 17	Very high percentage of wood (roots, branches, coconuts, chipped horticultural waste). Lesser amounts of concrete and plastic
17 - 18.5	Sand with no apparent debris or wood

PIT 2

Depth (feet)	Description
0 – 3	Yellowish lime sludge
3 – 8	Dark gray sand with silt or clay
8 – 9	Light gray to white fine sand with no apparent debris or wood

PIT 3

Depth (feet)	Description
0 – 3	Yellowish lime sludge
3 – 8	High percentage of organics (roots, wood, coconuts), plastic, hubcap
8 – 9	Fine sand with no apparent debris or wood

PIT 4

Depth (feet)	Description
0 – 6	Construction debris (concrete, tire, piling, wood, reinforcing rods, PVC pipe, carpet)
6 – 14	Organics (mulch, coconuts, tree trunks), plywood, plastic, and construction debris
14 – 18	Clayey sand with no apparent debris

Test Pit Observation Logs
Date of excavation: 5/12/04

PIT 5

Depth (feet)	Description
0 – 4	Sand and lime sludge
4 - 18	High percentage of organics (mulch and horticultural waste) with plastic and small amounts of trash. Buried material apparently extends deeper

PIT 6

Depth (feet)	Description
0 - 3	Organics and horticultural waste
3 - 4	Yellowish lime sludge
4 - 12	Organics and horticultural waste
12 - 15	Clayey sand or lime sludge
15 - 18	Organic debris. Buried material may extend deeper

PIT 7

Depth (feet)	Description
0 - 2	Sand, organics and concrete fragments
2 - 3	Yellowish lime sludge
3 - 15	Organics, coconuts, wood, plastic and sand
15 - 18	Clay with no apparent debris

PIT 8

Depth (feet)	Description
0 - 6	Sand and low percentage of organics
6 - 7	Yellowish lime sludge
7 - 18	High percentage of organics. Buried material may extend deeper

Test Pit Observation Logs
Date of excavation: 5/12/04

PIT 9

Depth (feet)	Description
0 - 4	Sand with no apparent debris
4 - 5.5	Peat with no apparent debris
5.5	Sand with no apparent debris

PIT 10

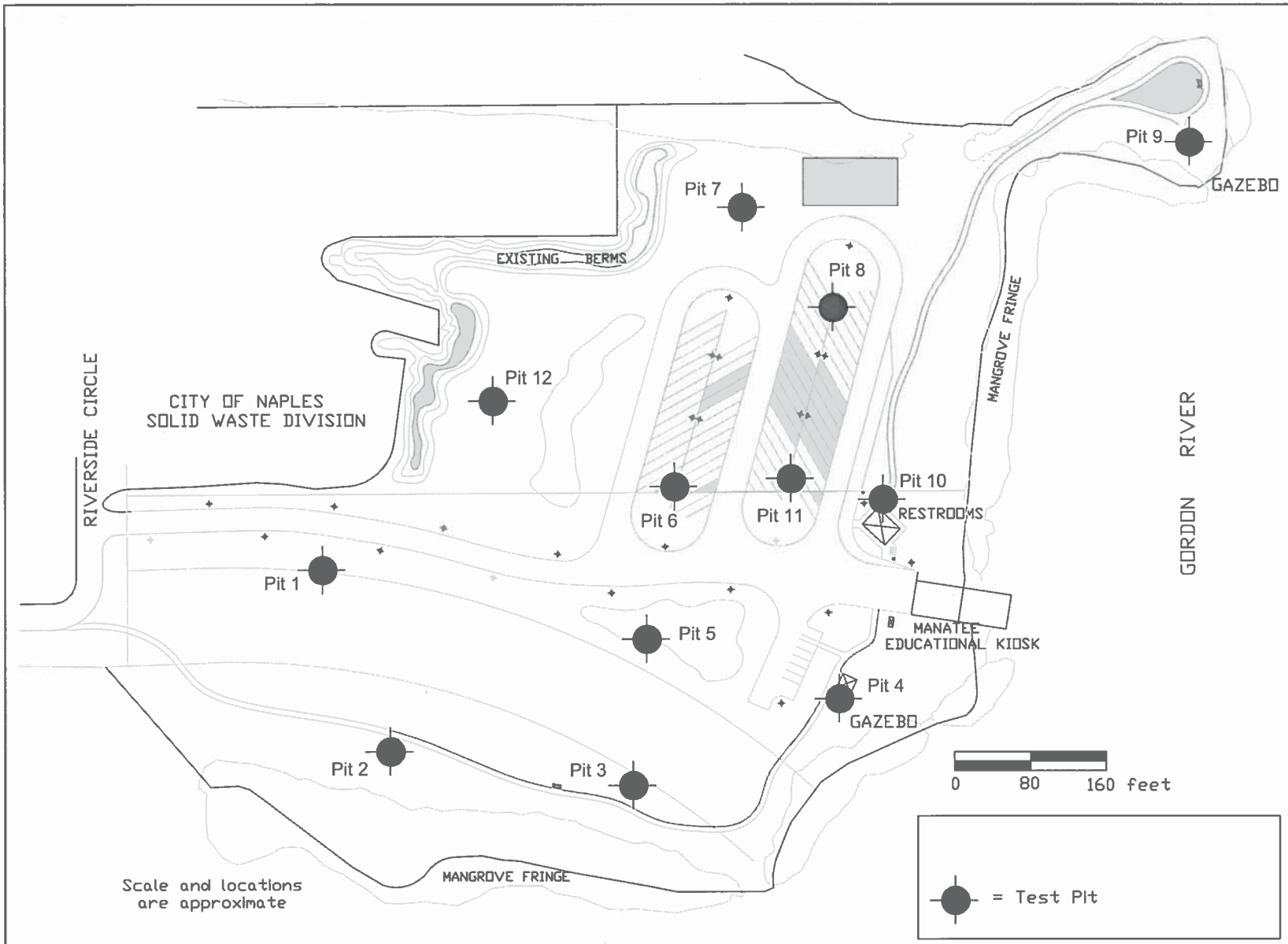
Depth (feet)	Description
0 - 4	Sand with low percentage of fine organics and concrete
4 - 5	Yellowish lime sludge
5 - 12	Organics, concrete, plastic (small amount)

PIT 11

Depth (feet)	Description
0 - 2	Sand with low percentage of fine organics
2 - 7	Yellowish lime sludge
7 - 14	High percentage of organics
14	Sand with no apparent debris

PIT 12

Depth (feet)	Description
0 - 11	High percentage of organics
11 - 13	Clay or lime sludge
13 - 18	Sand clay with organics and small amounts of trash (hoses, bottles), debris apparently continues deeper



Proposed Pulling Landing Park
Naples Florida
MACTEC Project 6787-04-4060

MACTEC

MACTEC Engineering and Consulting
3627 Progress Ave. Naples, FL. 34104

Test Pit Locations

Drawn by: TDB 7/02/04