Form # P 04

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

B[illegible]CTION

PERMIT

Please Read Application And Notes, If Any, Attached

Permit Number: 051279

This is to certify that WATERVIEW DEVELOPM[illegible]NT LLC [illegible]/Cook Constr[illegible]ion

has permission to Build 94 Condominiums/ FO[illegible]DATIO[illegible]ONLY [illegible]RMIT

AT 407 CUMBERLAND AVE [illegible]L 036 H025001

provided that the person or persons, [illegible]m or [illegible]epting this permit shall comply with all of the provisions of the Statutes of M[illegible]ine and of th[illegible]nces of the City of Portland regulating the construction, maintenance and u[illegible] of buildings and st[illegible]tures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

N[illegible]ication[illegible] inspec[illegible]n must g[illegible] and wr[illegible]n permis[illegible]n procu b[illegible]re this b[illegible]ding or [illegible]t thereo[illegible] la[illegible]ed or c[illegible]closed-in. H[illegible]R NOTICE IS REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

OTHER REQUIRED APPROVALS

Fire Dept. _____

Health Dept. _____

Appeal Board _____

Other _____

Department Name

EXPIRED

Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No:	Issue Date:	CBL: 036-H-18→23 ~~036 H025001~~
05-1279		

Location of Construction:	Owner Name:	Owner Address:	Phone: 36-H-023→25
407 CUMBERLAND AVE	WATERVIEW DEVELOPMENT L	PO BOX 1199	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Allied/Cook Construction	PO Box 1396 Portland	2077722888
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:** C38
		Multi Family	

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Vacant Land	94 Condominium/ Build 94 Condominiums/ FOUNDATION ONLY PERMIT	$13,836.00	$1,535,000.00	1

FIRE DEPT: ☐ Approved ☐ Denied

Signature:

INSPECTION: Use Group: Type:

Signature:

Proposed Project Description:

Build 94 Condominiums/ FOUNDATION ONLY PERMIT

Expired

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)

Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied

Signature: Date:

Permit Taken By:	Date Applied For:
ldobson	09/02/2005

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland N/A	☐ Variance	☑ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone ~~Panel 13~~ Zone C	☐ Conditional Use	☐ Requires Review
☒ Subdivision	☐ Interpretation	☐ Approved
☒ Site Plan #2005-0033	☐ Approved	☐ Approved w/Conditions
Maj ☒ Min ☐ MM ☐ OK with conditions	☐ Denied	☐ Denied
Date: 11/10/05	Date:	Date:

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT | ADDRESS | DATE | PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE | DATE | PHONE

City of Portland, Maine - Building or Use Permit

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No:	Date Applied For:	CBL:
05-1279	09/02/2005	036 H018001

Location of Construction:	Owner Name:	Owner Address:	Phone:
409 Cumberland Ave	Waterview Develpment LLC	477 Congress St, suite 111	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Allied/Cook Construction	PO Box 1396 Portland	(207) 772-2888
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Multi Family	

Proposed Use:	Proposed Project Description:
94 Condominium/ Build 94 Condominiums/ FOUNDATION ONLY PERMIT	Build 94 Condominiums/ FOUNDATION ONLY PERMIT

Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Marge Schmuckal **Approval Date:** 11/10/2005

Note: Heights still need to be check on future permit for building to be sure compliance with contract zone - also needs planning final sign-off **Ok to Issue:** ☑

1) This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.

2) This permit is for the foundation ONLY. Separate permits shall be required for the rest of the structure PRIOR to starting that work.

Dept: Building **Status:** Pending **Reviewer:** Mike Nugent **Approval Date:**

Note: 11/10/05 Marge gave to Mike for final review -Fire already signed off in system **Ok to Issue:** ☐

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Lt. MacDougal **Approval Date:** 03/14/2005

Note: **Ok to Issue:** ☑

1) Direct access into the trash room from Mechanic St is required.

2) Application requires State Fire Marshal approval.

Dept: Planning **Status:** Approved with Conditions **Reviewer:** Barbara Barhydt **Approval Date:** 05/10/2005

Note: The digital site plan and subdivision plans for the project shall be submitted prior to the issuance of a building permit **Ok to Issue:** ☐

1) The final condominium documents will be submitted for review and approval to the City before the release of the subdivision plat.

2) All required licenses with any attached conditions deemed appropriate by the City for temporary construction work, planters, lighting, and the entrance awning shall be obtained prior to the issuance of a building permit.

3) Tge applicant shall monitor, post development, for a period of three years from the issuance of a certificate of occupancy, the intersection at Mechanic Street and Cumberland Avenue. If based on teh monitoring results the City's staff dtermines that traffic improvements are required , the applicant shall make a contribution of up to $25,000 to the installation of such improvements.

4) All required easements must be presented to the City Council for approval prior to the release of the subdivsion plat

5) The conditions of the Fire Department shall be met prior to the issuance of a building permit.

6) The applicant shall contribut $25,000 to upgrade the existing traffic signal at the corner of Cumberland Avenue and Forest Avenue before the issuance of a building permit.

8) The applicant will work with the City Arborist on the location of trees and planters proposed within the public right-of-way.

9) Prior to the issuance of a certificate of occupancy, the applicant shall provide evidence, for review and approval by staff, that the required off-site parking spaces are available as required by the conditional zone agreement.

10 The Board requests that the City of Portland Public Works Department review realigning the center line of Forest Avenue to allow a left turning lane to the site and the applicant funds such realignment, if determined to be appropriate by PWD.

City of Portland, Maine - Building or Use Permit

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05-1279	09/02/2005	036 H018001

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Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Multi Family	

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94 Condominium/ Build 94 Condominiums/ FOUNDATION ONLY PERMIT	Build 94 Condominiums/ FOUNDATION ONLY PERMIT

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Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Allied/Cook Construction	PO Box 1396 Portland	(207) 772-2888
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Multi Family	

11 The conditions contained in the review by Jim Seymour, Development Review Coordinator, Sebago Technics, Inc. Dated May 6, 2005 shall be met piror to issuance of a building permit.

Location of Construction:	Owner Name:	Owner Address:	Phone:
409 Cumberland Ave	Waterview Develpment LLC	477 Congress St, suite 111	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Allied/Cook Construction	PO Box 1396 Portland	(207) 772-2888
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Multi Family	

11 The conditions contained in the review by Jim Seymour, Development Review Coordinator, Sebago Technics, Inc. Dated May 6, 2005 shall be met piror to issuance of a building permit.

All Purpose Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: The Waterview 409 Cumberland Avenue		
Total Square Footage of Proposed Structure	Square Footage of Lot	
Tax Assessor's Chart, Block & Lot Chart# 36 Block# H Lot# 25	Owner: Waterview Development, LLC 477 Congress Street	Telephone: 773-3477
Lessee/Buyer's Name (If Applicable)	Applicant name, address & telephone: Allied/Cook P.O. Box 1396 Portland, ME	Cost Of Work: $ 1,535,000. **Fee:** $ 13,836.

Current use: Vacant Lot

If the location is currently vacant, what was prior use: Apartments

Approximately how long has it been vacant: 10 Days

Proposed use: 94 Condominium Units

Project description: The Waterview at Bayside
See Plans Attached
(Foundation Permit)

DEPT. OF BUILDING INSPECTION
CITY OF PORTLAND, ME
SEP - 2
RECEIVED

Contractor's name, address & telephone: Allied/Cook Const. Corp. 772-2888
P.O. Box 1396 Portland, ME 04104

Who should we contact when the permit is ready: Paul Laliberte, VP Project Management

Mailing address: P.O. Box 1396
Portland, ME 04104

Phone: 772-2888

IF THE REQUIRED INFORMATION IS NOT INCLUDED IN THE SUBMISSIONS THE PERMIT WILL BE AUTOMATICALLY DENIED AT THE DISCRETION OF THE BUILDING/PLANNING DEPARTMENT, WE MAY REQUIRE ADDITIONAL INFORMATION IN ORDER TO APROVE THIS PERMIT.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature of applicant: Paul Laliberte	**Date:** 8/31/01

This is not a permit, you may not commence ANY work until the permit is issued

Allied/Cook Construction Corp
P.O. Box 1396
Portland, ME 04104
(207)772-2888

Purchase Order
Number: 05046001

To: City of Portland
P.O. Box 544
Portland, ME 04112-0544

Date: 08-31-2005
Vendor: PTLDCITY
Required:

Project: Waterview Sitework & Foundat.

Job #: 05-046

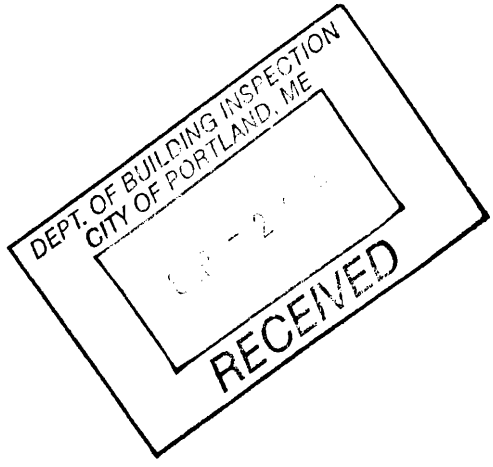
Ship to: Waterview Sitework & Foundat.
Cumberland & Forest Avenue
Portland, ME

Bill to: P.O. Box 1396
Portland, ME 04104

Job Phase: 17.001 Catagory: G Retainage %:

Item	Quantity	Units	Description	Unit Price	Amount
1			Foundation building permit. $30.00 + $1,534,000 @ $9.00 $30.00 + $13,806.= $13,836.		$13,836.00

PLEASE REFERENCE THIS P.O. # ON YOUR INVOICE



Total Amount: $13,836.00

Approved by:
City of Portland

Signed: _____

Date: _____

Approved by:
Allied/Cook Construction Corp

Signed: _____

Date: 8/31/05

ALLIED/COOK
CONSTRUCTION
Planners • Managers • Design/Builders
Building Excellence Since 1958

September 1, 2005

Mr. Michael Nugett
Code Enforcement
City of Portland
City Hall
Portland, ME

RE: The Waterview @ Bayside Condominium Project, Cumberland Ave.

Dear Mr. Nugent,

We are hereby requesting a foundation permit for The Waterview project. The designers are still in the process of completing Architectural and Structural Designs and project the package will be ready in early October. The owner has elected to fast track this project in order to meet commitments to unit owners. We have obtained the necessary street and sidewalk occupancy permits. It is our hope to prepare the building pad to bottom of pile cap while the foundation permit application is being reviewed. Please let us know if this is possible.

Please contact us if you have any questions regarding this application.

Sincerely,

Paul Laliberté, PE
VP, Project Management
Allied/Cook Construction
cell 207-415-6352

OFFICE: P.O. BOX 1396 • PORTLAND, ME 04104
207-772-2888 • FAX 207-885-5135 • Email: info@alliedcook.com

KEEP THIS PORTION

ACCOUNT NUMBER
5428

REAL ESTATE PROPERTY TAX STATEMENT
City of Portland

2004

Fiscal Year
July 1, 2003 - June 30, 2004
Owner of Record as of April 1, 2003

OBL
036 - H-020-001

WATERVIEW DEVELOPMENT LLC

PO BOX 1199
NAPLES ME 04055

Assessed Property Description
36-H-20
MECHANIC ST 8-10
2551 SF

10
Mechanic
Singe family
w/garage

CURRENT BILLING DISTRIBUTION	
School	$980.37
Public Works	$99.60
Parks & Recreation	$48.83
Fire	$150.37
Police	$146.47
Debt Repayments	$167.95
General Government	$158.19
County	$68.35
Health & Human Services	$9.76
Library	$58.59
Metro Transit District	$37.11
Enterprise Funds	-$3.91
Regional Waste Systems	$31.25

CURRENT BILLING INFORMATION	
Land Value	$26,250.00
Building Value	$46,620.00
Total Value	$72,870.00
Exemptions	$0.00
Homestead	$0.00
Taxable Value	$72,870.00
Tax Rate	$26.80
TOTAL TAX	$1,952.92
AMOUNT PAID	$976.46

Remittance Instructions

To avoid standing in line, it is recommended that taxes be paid by mail. Please make check or money order payable to: *CITY OF PORTLAND*. **Credit cards are not accepted for property tax payments.**

Use enclosed envelope to mail in your payment.

Use top right margin for change of address.

Remit To: CITY OF PORTLAND MAINE
FINANCE DEPARTMENT
TREASURY AND COLLECTION DIVISION
P O BOX 5dd
PORTLAND ME 04112-05dd

KEEP THIS PORTION

2004

PERSONAL PROPERTY TAX STATEMENT
City of Portland

WATERVIEW DEVELOPMENT LLC
13337 PROVENCE DR
PALM BEACH GARDENS FL 33410

ACCOUNT NUMBER
20165 W21300A

Assessed Property Location
407 CUMBERLAND AVE

Fiscal Year
July 1, 2003 - June 30, 2004

IF YOU ARE THE OWNER OF RECORD AS OF APRIL 1, 2003
YOU ARE LIABLE FOR THE TAXES ASSESSED THE ENTIRE YEAR.

CURRENT BILLING DISTRIBUTION	
School	$20.21
Public Works	$2.46
Parks & Recreation	$1.21
Fire	$3.71
Police	$3.62
Debt Repayments	$4.15
General Government	$3.91
County	$1.69
Health & Human Services	$0.24
Library	$1.45
Metro Transit District	$0.92
Enterprise Funds	-$0.10
Regional Waste Systems	$0.77

CURRENT BILLING INFORMATION	
Miscellaneous	$0.00
Machinery & Equipment	$0.00
Furniture & Fixtures	$1,800.00
Total Value	$1,800.00
Tax Rate	$26.88
TOTAL TAX	$48.38
AMOUNT PAID	$24.12

personal property supplied to tenants in building (washers, dryers, stove, refrigerator etc.)

Remittance Instructions

To avoid standing in line, it is recommended that taxes be paid by mail. Please make check or money order payable to: ***CITY OF PORTLAND*** Credit cards are not accepted for property tax payments.

Use enclosed envelope to mail in your payment.

Use top right margin for change of address.

Remit To: CITY OF PORTLAND MAINE
FINANCE DEPARTMENT
TREASURY AND COLLECTION DIVISION
P O BOX 544
PORTLAND ME 04112-0544

REAL ESTATE PROPERTY TAX STATEMENT **FY 2006** July 1, 2005 - June 30, 2006

DUE SEPT 9, 2005	DUE MARCH 3, 2006	AMOUNT PAID	INTEREST DUE	PAY THIS AMOUNT
$448.80	$448.80	$0.00	$0.00	$448.80

FIRST BILLING

036 - H-018-001

ACCOUNT NUMBER 5424

036 - H-018-001

Assessed Property Description
36-H-18 FOREST AVE
71-73 & MECHANIC ST
12-14 5690SF

RE 5424
HAINS ROBERT C

250 HOLM AVE
PORTLAND ME 04102

BRING COMPLETE TAX BILL WHEN PAYING IN PERSON.

Please Make Your Check Payable to: City of Portland

PARTIAL PAYMENTS MAY BE MADE AT ANY TIME.

Change of Address

Name:

RETURN THIS TOP PORTION WITH PAYMENT

Credit cards are not accepted for property tax payments.

KEEP THIS PORTION

ACCOUNT NUMBER
5424

REAL ESTATE PROPERTY TAX STATEMENT
City of Portland

2006
Fiscal Year
July 1, 2005 - June 30, 2006
Owner of Record as of April 1, 2005

HAINS ROBERT C

250 HOLM AVE
PORTLAND ME 04102

CBL
036 - H-018-001

Assessed Property Description
36-H-18 FOREST AVE
71-73 & MECHANIC ST
12-14 5690SF

CURRENT BILLING DISTRIBUTION

School	$471.24
Debt Repayments	$120.28
Police	$61.93
Fire	$54.75
Public Works	$49.37
General Government	$35.90
County Tax	$30.52
Library	$23.34
Parks & Recreation	$20.64
Regional Waste Systems	$16.16
Metro Transit District	$16.16
Health & Human Ser.	($3.59)
Enterprise Funds	$0.90

CURRENT BILLING INFORMATION

Land Value	$44,590.00
Building Value	$0.00
Total Value	$44,590.00
Exemptions	$0.00
Homestead	$0.00
Taxable Value	$44,590.00
Tax Rate	$20.13
TOTAL TAX	$897.60
AMOUNT PAID	$0.00

Remittance Instructions

To avoid standing in line, it is recommended that taxes be paid by mail. Please make check or money order payable to: ***CITY OF PORTLAND***. **Credit cards are not accepted for property tax payments.**

Use enclosed envelope to mail in your payment.

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Remit To: CITY OF PORTLAND MAINE
FINANCE DEPARTMENT
TREASURY AND COLLECTION DIVISION
P O BOX 544
PORTLAND ME 04112-0544

CITY OF PORTLAND
BUILDING CODE CERTIFICATE
389 Congress St., Room 315
Portland, Maine 04101

ACCESSIBILITY CERTIFICATE

Designer: Benedict B. Walter - CWS Architects

Address of Project: 409 Cumberland Ave.

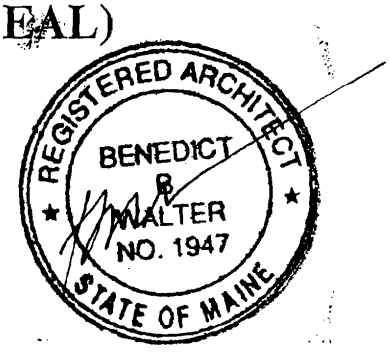
Nature of Project: 94 unit, 12 story residential condominium complex

The technical submissions covering the proposed construction work as described above have been designed in compliance with applicable referenced standards found in the Maine Human Rights Law and Federal Americans with Disability Act.

Signature:

Title: Vice-President

(SEAL)



Firm: CWS Architects

Address: 434 Cumberland Ave.
Portland, ME 04101

Phone: 207-774-4441

CITY OF PORTLAND
BUILDING CODE CERTIFICATE
389 Congress St., Room 315
Portland, Maine 04101

TO: Inspector of Buildings City of Portland, Maine
Department of Planning & Urban Development
Division of Housing & Community Service

FROM: CWS Architects - Benedict B. Walter

RE: Certificate of Design

DATE: 9/1/05

These plans and / or specifications covering construction work on:

Waterview Apartments - 94 unit, 12 story residential condominium complex.

Have been designed and drawn up by the undersigned, a Maine registered Architect / Engineer according to the ***2003 International Building Code*** and local amendments.

(SEAL) REGISTERED ARCHITECT BENEDICT B WALTER NO. 1947 STATE OF MAINE

Signature:

Title: Vice President

Firm: CWS Architects

Address: 434 Cumberland Ave.
Portland, ME 04101

As per Maine State Law:

$50,000.00 or more in new construction, repair expansion, addition, or modification for Building or Structures, shall be prepared by a registered design Professional.

FROM DESIGNER: CWS Architects - Benedict B. Walter

DATE: 9/1/05

Job Name: Waterview Apartments

Address of Construction: 409 Cumberland Ave.

2003 International Building Code

Construction project was designed according to the building code criteria listed below:

Building Code and Year IBC 2003 Use Group Classification(s) Storage (S2) & Residential (R2)

Type of Construction IIA R2 ⇒ IIA, S2 ⇒ IA

Will the Structure have a Fire suppression system in Accordance with Section 903.3.1 of the 2003 IRC yes

Is the Structure mixed use? yes if yes, separated or non separated (see Section 302.3) separate

Supervisory alarm system? yes Geotechnical/Soils report required?(See Section 1802.2) yes

STRUCTURAL DESIGN CALCULATIONS

Performed Submitted for all structural members *(106.1, 106.1.1)*

DESIGN LOADS ON CONSTRUCTION DOCUMENTS (1603)

Uniformly distributed floor live loads *(1603.1.1, 1607)*

Floor Area Use	Loads Shown
private rooms & corridors serving lobbies, first floor corridors, stairs	400PSF 100psf 100psf

Wind loads *(1603.1.4, 1609)*

analytical Design option utilized *(1609.1.1, 1609.6)*

100 Basic wind speed *(1609.3)*

cat (II, Iw=1.0) Building category and wind importance factor, I_w *(Table 1604.5, 1609.5)*

C Wind exposure category *(1609.4)*

0.18 Internal pressure coefficient *(ASCE 7)*

22.0min-, 58.4max Component and cladding pressures *(1609.1.1, 1609.6.2.2)*

35.5max Main force wind pressures *(1609.1.1, 1609.6.2.1)*

Earthquake design data *(1603.1.5, 1614 - 1623)*

equivalent lateral Force proceddure Design option utilized *(1614.1)*

I Seismic use group ("Category") *(Table 1604.5, 1616.2)*

sos+.295, sos1=0.111 Spectral response coefficients, S_{DS} & S_{D1} *(1615.1)*

C Site class *(1615.1.5)*

yes Live load reduction *(1603.1.1, 1607.9, 1607.10)*

snow (>20psi) Roof live loads *(1603.1.2, 1607.11)*

Roof snow loads *(1603.1.3, 1608)*

60psf Ground snow load, P_g *(1608.2)*

46psf If P_g > 10 psf, flat-roof snow load, P_f *(1608.3)*

1.0 If P_g > 10 psf, snow exposure factor, C_e *(Table 1608.3.1)*

1.0 If P_g > 10 psf, snow load importance factor, I_s *(Table 1604.5)*

1.1 Roof thermal factor, C_t *(Table 1608.3.2)*

46psf Sloped roof snowload, P_s *(1608.4)*

B Seismic design category *(1616.3)*

ordinary concentrically braced frames
ordinary moment ~~frames~~ Basic seismic-force-resisting system *(Table 1617.6.2)*

R=3, Cd=3 Response modification coefficient, R_I and deflection amplification factor, C_d *(Table 1617.6.2)*

equivalent lateral force procedure Analysis procedure *(1616.6, 1617.5)*

509.3 kips Design base shear *(1617.4, 1617.5.1)*

Flood loads *(1603.1.6, 1612)*

n/a Flood hazard area *(1612.3)*

---- Elevation of structure

Other loads

n/a Concentrated loads *(1607.4)*

20psf or actural weight Partition loads *(1607.5)*

n/a Impact loads *(1607.8)*

included as applicable Misc. loads *(Table 1607.6, 1607.6.1, 1607.7, 1607.12, 1607.13, 1610, 1611, 2404)*

The Waterview at Bayside Condominium				1-Sep-05
Code Analysis				
International Building Code 2003				
	Basement	Floors 1-12		
Use Groups	Storage S2	Residential R2		
Assumed Construction Type	IA	IB		
Actual building area (SF/floor)	10,920	10,920		
Total floor area per use (SF)	10,920	131,040		
Total building area	141,960			
Frontage Calculations	North	East	South	West
Frontage	0	149	79	149
Width		>30	>30	>30
Total Frontage	377			
Perimeter	456			
Frontage increase % = 100[F/P-0.25]W/30	57.68%			
Section 506 Area Modifications				
Allowable tabular area	100%			
Increase for frontage	57.68%			
Increase for sprinklers (NFPA 13)	200%			
Total percentage factor	358%			
Conversion factor	3.58			
Adjusted building area	3,053			
Allowable area calculations				
Tabular area - Type IB	Unlimited			
Conversion factor	3.58			
Allowable area per floor (SF)	Unlimited	>10,920	OK	
Maximum area calculations				
Total floor area (all stories)	141,960			
Allowable area per floor (SF)	Unlimited			
Area per floor x 3	Unlimited	>141,960	OK	
Section 508 Special Provisions				
508.2 Group S2 garage beneath Group R2 as separate buildings				
Construction Type - S2 Use Group	IA			
Separation between S2 and R2 uses	3 hours	provided		

Section 504 Height Modifications	S2 Use Group		R2 Use Group	
	Feet	Stories	Feet	Stories
Actual buildng height	12	1	137	12
Tabular building height - Type IB	Unlimited	Unlimited	160	11
Increase for sprinklers (NFPA 13)			20	1
Allowable building height	Unlimited	Unlimited	180	12
Section 403 High Rise Buildings	S2 Use	R2 Use		
403.3 Allowable reduction in fire resistance rating from IB to IIA with sprinkler initiating	IA	Change to IIA		

The Waterview at Bayside Condominium				**1-Sep-05**
Code Analysis				
International Building Code 2003				
Table 601 Fire Resistance Ratings (hours)	S2 Use	Provided	R2 Use	Provided
	IA		IIA	
Structural Frame including Columns	3	3	1	1
Bearing Walls - Exterior	3	3	1	1
Bearing Walls - Interior	3	3	1	1
Nonbearing Walls - Exterior	0	0	0	0
Nonbearing Walls - Interior	0	0	0	0
Floor Construction including Beams	3	3	1	1
Roof Construction including Beams	n/a	n/a	1	1
Section 707 Shaft Enclosures				
Required fire rating	2 hours			
Provided	2 hours			
Section 708 Fire Partitions				
Required fire rating - dwelling unit separation - fully sprinklered	1/2 hour			
Provided	1 hour			
Section 1004 Occupant Load	S2 Use	R2 Use		
Floor area allowance - persons/SF	200	200		
Floor area (SF)	10,920	10,920		
Occupancy load per floor	54.6	54.6		
Section 1005 Required Egress Width				
Stairways - 0.3"/person	16.38	16.38		
Provided	44	88	two stairways	
Other components - 0.2"/person	10.92	10.92		
Provided - minimum @ doorways	72	72	two egress doors	
Section 1018 Number of Exits				
Required	2	2		
Provided	2	2		

Statement of Special Inspections - Exhibit A

Project: *Waterview at Bayside*

Location: *Cumberland and Forest Avenues, Portland, ME*

Owner: *Waterview Development LLC*

This *Statement of Special Inspections* encompass the following discipline:

☒ Structural (foundations only) ☐ Mechanical/Electrical/Plumbing

☐ Architectural ☐ Other: _____

Design Professional in Responsible Charge: *Paul B. Becker, P.E.*

Firm Name: *Becker Structural Engineers, Portland, ME*

(Note: *Statement of Special Inspections* for other disciplines may be included under a separate cover)

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Structural Special Inspection Coordinator (SSIC) and the identity of other approved agencies to be retained for conducting these inspections and tests.

The Structural Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Code Official (BCO) and the Structural Registered Design Professional in Responsible Charge (SRDP). Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Structural Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Structural Registered Design Professional in Responsible Charge at an interval determined by the SSIC and the BCO.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted to the BCO prior to issuance of a Certificate of Use and Occupancy.

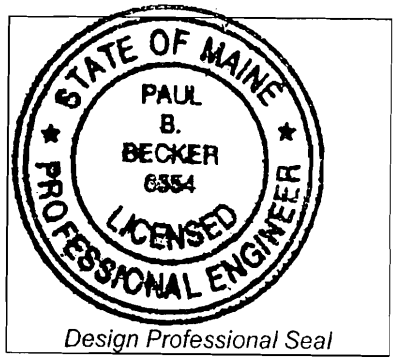
Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: ☒ *Upon request of Building Official* _____ or ☐ per attached schedule.

Prepared by:

Paul B. Becker, P.E.
(type or print name of the Structural Registered Design Professional in Responsible Charge)

Signature *7/15/2005* Date



Design Professional Seal

Owner's Authorization:

Signature Date

Building Code Official's Acceptance:

Signature Date

Statement of Special Inspections (Continued) - Exhibit A

List of Agents

Project: *Waterview at Bayside*

Location: *Cumberland and Forest Avenues, Portland, ME*

Owner: *Waterview Development LLC*

This *Statement of Special Inspections* encompass the following discipline:

☒ Structural ☐ Mechanical/Electrical/Plumbing
☐ Architectural ☐ Other: _____

(Note: *Statement of Special Inspections* for other disciplines may be included under a separate cover)

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

☒ Soils and Foundations
☒ Cast-in-Place Concrete
☐ Precast Concrete
☐ Masonry
☐ Structural Steel
☐ Wood Construction
☐ Spray Fire Resistant Material
☐ Cold-Formed Steel Framing
☐ Exterior Insulation and Finish System
☐ Mechanical & Electrical Systems
☐ Architectural Systems
☐ Special Cases

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. Structural Special Inspection Coordinator (SSIC)	*Becker Structural Engineers (BSE)*	*75 York Street Portland, ME 04107 (207) 879-1838 info@beckerstructural.com*
2. Special Inspector (SI 1)	*Becker Structural Engineers (BSE)*	*75 York Street Portland, ME 04107 (207) 879-1838 info@beckerstructural.com*
3. Special Inspector (SI 2)	*Haley & Aldrich*	*75 Washington Avenue Suite 203 Portland, ME 04101 207.482.4600*
4. Testing Agency (TA 1)	*S.W. Cole Engineering*	*286 Portland Road Gray, ME 04039-9586 207-657-2866*
5. Testing Agency (TA 2)		
6. Other (O1)		

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Statement of Special Inspections (Continued) - Exhibit A

Final Report of Special Inspections (SSIC/SI 1)

[To be completed by the Structural Special Inspections Coordinator (SSIC/SI 1). Note that all Agent's Final Reports must be received prior to issuance.]

Project:
Location:
Owner:
Owner's Address:

Architect of Record: _____ _____
(name) *(firm)*

Structural Registered Design Professional in Responsible Charge: _____ *Becker Structural Engineers*
(name) *(firm)*

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Structural Special Inspection Coordinator

_____
(Type or print name)

_____
(Firm Name)

_____ _____
Signature Date

Licensed Professional Seal

Statement of Special Inspections (Continued) - Exhibit A

Special Inspector's/Agent's Final Report

Project:

Special Inspector or Agent: _____

(name) *(firm)*

Designation: TL1

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Inspector/Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Special Inspector or Agent:

_____ _____
(Type or print name)

Signature _____ _____ Date

Licensed Professional Seal
or
Certification Number

Schedule of Special Inspections – Exhibit B

SOILS & FOUNDATION CONSTRUCTION

Project: Waterview at Bayside, Portland, ME
Date Prepared: 07/15/2005

VERIFICATION AND INSPECTION IBC Section 1704.7, 1704.8, 1704.9	Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	DATE	REV
1. Verify existing soil conditions, fill placement and load bearing requirements							
a. Prior to placement of prepared fill, determine that the site has been prepared in accordance with the approved soils report.	Y	P	IBC 1704.7.1	SI2	PE/GE or EIT		
b. During placement and compaction of fill material, verify material being used and maximum lift thickness comply with the approved soils report.	Y	P	IBC 1704.7.2	SI2	PE/GE or EIT		
c. Test in-place dry density of compacted fill complies with the approved soils report.	Y	p	IBC 1704.7.2	TA1	NICET-ST or NICET-GET		
2. Pile foundations:							
a. Observe and record procedures for static load testing of piles.	N	C	IBC 1704.8	SI2	PE/GE or EIT		
b. Observe and record procedures for dynamic load testing of piles.	N	C		SI2	PE/GE or EIT		
c. Record installation of each pile and results of load test. Include cutoff and tip elevations of each pile relative to permanent reference.	N	C		TA1	NICET-GET		
d. Test welded splices of steel piles	N	C	AWS D1.1	TA1	AWS-CWI		
3. Pier foundations: Verify installation of pier foundations for buildings assigned to Seismic Design Category C, D, E or F.	Y	C	IBC 1704.9	SI2	PE/GE or EIT		
a. Verify pier diameter and length	Y	C		SI2	PE/GE or EIT		
b. Verify pier embedment (socket) into bedrock	Y	P		SI2	PE/GE or EIT		
c. Verify suitability of end bearing strata	Y	P		SI2	PE/GE or EIT		

Soils and Foundations Construction has been reviewed in accordance with sections 1704.7, 8 & 9 of the IBC Code

Special Inspector_____ Date_____

Schedule of Special Inspections – Exhibit B

CONCRETE CONSTRUCTION

Project: Waterview at Bayside, Portland, ME
Date Prepared: 07/15/2005

VERIFICATION AND INSPECTION IBC Section 1704.4	Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	DATE	REV
1. Inspection of reinforcing steel, including prestressing tendons, and placement	Y	P	ACI 318: 3.5, 7.1-7.7	SI 1	PE/SE or EIT		
2. Inspection of reinforcing steel welding in accordance with Table 1704.3, Item 5B	N		Welding of Reinf Not Allowed	TA 1	AWS-CWI		
3. Inspect bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased	Y	C	IBC 1912.5	SI 1	PE/SE or EIT		
4. Verifying use of required design mix	Y	P	ACI 318: Ch 4, 5.2-5.4	SI 1	PE/SE or EIT		
5. At time fresh concrete is sampled to fabricate specimens for strength test, perform slump and air content test and temperature	Y	C	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	TA 1	ACI-CFTT or ACI-STT		
6. Inspection of concrete and shotcrete placement for proper application techniques	Y	C	ACI 318: 5.9, 5.10	SI 1	PE/SE or EIT		
7. Inspection for maintenance of specified curing temperature and techniques	Y	P	ACI 318: 5.11-5.13	SI 1	PE/SE or EIT		
8. Inspection of Prestressed Concrete							
a. Application of prestressing force.	N	C	ACI 318: 18.20	SI 1	PE/SE or EIT		
b. Grouting of bonded prestressing tendons in seismic force resisting system	N	C	ACI 318: 18.18.4	SI 1	PE/SE or EIT		
9. Erection of precast concrete members	N	P	ACI 318: Ch 16	SI 1	PE/SE or EIT		
10. Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms beans and structural slabs	N	P	ACI 318: 6.2	TA 1	ACI-STT		
11. Inspection of steel embedments: Anchor Bolts, Embed Plates, bond-outs for shear keys	Y	P	ACI 318	SI 1	PE/SE or EIT		

Concrete Construction has been reviewed in accordance with section 1704.4 of the IBC Code

Special Inspector_____ Date_____

Statement of Special Inspections - Exhibit A

Project: *Waterview at Bayside*

Location: *Cumberland and Forest Avenues, Portland, ME*

Owner: *Waterview Development LLC*

This *Statement of Special Inspections* encompass the following discipline:

☒ Structural (foundations only) ☐ Mechanical/Electrical/Plumbing

☐ Architectural ☐ Other: _____

Design Professional in Responsible Charge: *Paul B. Becker, P.E.*

Firm Name: *Becker Structural Engineers, Portland, ME*

(Note: *Statement of Special Inspections* for other disciplines may be included under a separate cover)

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Structural Special Inspection Coordinator (SSIC) and the identity of other approved agencies to be retained for conducting these inspections and tests.

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A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted to the BCO prior to issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

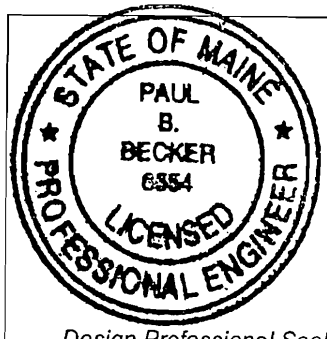
Interim Report Frequency: ☒ *Upon request of Building Official* _____ or ☐ per attached schedule.

Prepared by:

Paul B. Becker, P.E.
(type or print name of the Structural Registered Design Professional in Responsible Charge)

Signature

7/15/2005
Date



Design Professional Seal

Owner's Authorization:

Signature Date

Building Code Official's Acceptance:

Signature Date

Statement of Special Inspections (Continued) - Exhibit A

List of Agents

Project: *Waterview at Bayside*

Location: *Cumberland and Forest Avenues, Portland, ME*

Owner: *Waterview Development LLC*

This *Statement of Special Inspections* encompass the following discipline:

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☐ Architectural ☐ Other: _____

(Note: *Statement of Special Inspections* for other disciplines may be included under a separate cover)

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

☒ Soils and Foundations
☒ Cast-in-Place Concrete
☐ Precast Concrete
☐ Masonry
☐ Structural Steel
☐ Wood Construction
☐ Spray Fire Resistant Material
☐ Cold-Formed Steel Framing
☐ Exterior Insulation and Finish System
☐ Mechanical & Electrical Systems
☐ Architectural Systems
☐ Special Cases

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. Structural Special Inspection Coordinator (SSIC)	*Becker Structural Engineers (BSE)*	*75 York Street* *Portland, ME 04107* *(207) 879-1838* *info@beckerstructural.com*
2. Special Inspector (SI 1)	*Becker Structural Engineers (BSE)*	*75 York Street* *Portland, ME 04107* *(207) 879-1838* *info@beckerstructural.com*
3. Special Inspector (SI 2)	*Haley & Aldrich*	*75 Washington Avenue* *Suite 203* *Portland, ME 04101* *207.482.4600*
4. Testing Agency (TA 1)	*S.W. Cole Engineering*	*286 Portland Road* *Gray, ME 04039-9586* *207-657-2866*
5. Testing Agency (TA 2)		
6. Other (O1)		

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Final Report of Special Inspections (SSIC/SI 1)

[To be completed by the Structural Special Inspections Coordinator (SSIC/SI 1). Note that all Agent's Final Reports must be received prior to issuance.]

Project:
Location:
Owner:
Owner's Address:

Architect of Record: _____
(name) *(firm)*

Structural Registered Design Professional in Responsible Charge: _____ *Becker Structural Engineers*
(name) *(firm)*

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Comments:

(Attach continuation sheets if required to complete the description of corrections.)

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Respectfully submitted,
Structural Special Inspection Coordinator

_____
(Type or print name)

_____
(Firm Name)

_____
Signature Date

Licensed Professional Seal

Statement of Special Inspections (Continued) - Exhibit A

Special Inspector's/Agent's Final Report

Project:
Special Inspector
or Agent: _____
(name) *(firm)*

Designation: TL1

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Inspector/Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

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Respectfully submitted,
Special Inspector or Agent:

_____ _____
(Type or print name)

Signature _____ _____
Date

Licensed Professional Seal
or
Certification Number

Schedule of Special Inspections – Exhibit B

SOILS & FOUNDATION CONSTRUCTION

Project: Waterview at Bayside, Portland, ME
Date Prepared: 07/15/2005

VERIFICATION AND INSPECTION IBC Section 1704.7, 1704.8, 1704.9	Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	DATE	REV
1. Verify existing soil conditions, fill placement and load bearing requirements							
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b. During placement and compaction of fill material, verify material being used and maximum lift thickness comply with the approved soils report.	Y	P	IBC 1704.7.2	SI2	PE/GE or EIT		
c. Test in-place dry density of compacted fill complies with the approved soils report.	Y	p	IBC 1704.7.2	TA1	NICET-ST or NICET-GET		
2. Pile foundations:							
a. Observe and record procedures for static load testing of piles.	N	C	IBC 1704.8	SI2	PE/GE or EIT		
b. Observe and record procedures for dynamic load testing of piles.	N	C		SI2	PE/GE or EIT		
c. Record installation of each pile and results of load test. Include cutoff and tip elevations of each pile relative to permanent reference.	N	C		TA1	NICET-GET		
d. Test welded splices of steel piles	N	C	AWS D1.1	TA1	AWS-CWI		
3. Pier foundations: Verify installation of pier foundations for buildings assigned to Seismic Design Category C, D, E or F.	Y	C	IBC 1704.9	SI2	PE/GE or EIT		
a. Verify pier diameter and length	Y	C		SI2	PE/GE or EIT		
b. Verify pier embedment (socket) into bedrock	Y	P		SI2	PE/GE or EIT		
c. Verify suitability of end bearing strata	Y	P		SI2	PE/GE or EIT		

Soils and Foundations Construction has been reviewed in accordance with sections 1704.7, 8 & 9 of the IBC Code

Special Inspector_____ Date_____

Schedule of Special Inspections – Exhibit B
CONCRETE CONSTRUCTION

Project: Waterview at Bayside, Portland, ME
Date Prepared: 07/15/2005

VERIFICATION AND INSPECTION IBC Section 1704.4	Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	DATE	REV
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2. Inspection of reinforcing steel welding in accordance with Table 1704.3, Item 5B	N		Welding of Reinf Not Allowed	TA 1	AWS-CWI		
3. Inspect bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased	Y	C	IBC 1912.5	SI 1	PE/SE or EIT		
4. Verifying use of required design mix	Y	P	ACI 318: Ch 4, 5.2-5.4	SI 1	PE/SE or EIT		
5. At time fresh concrete is sampled to fabricate specimens for strength test, perform slump and air content test and temperature	Y	C	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	TA 1	ACI-CFTT or ACI-STT		
6. Inspection of concrete and shotcrete placement for proper application techniques	Y	C	ACI 318: 5.9, 5.10	SI 1	PE/SE or EIT		
7. Inspection for maintenance of specified curing temperature and techniques	Y	P	ACI 318: 5.11-5.13	SI 1	PE/SE or EIT		
8. Inspection of Prestressed Concrete							
a. Application of prestressing force.	N	C	ACI 318: 18.20	SI 1	PE/SE or EIT		
b. Grouting of bonded prestressing tendons in seismic force resisting system	N	C	ACI 318: 18.18.4	SI 1	PE/SE or EIT		
9. Erection of precast concrete members	N	P	ACI 318: Ch 16	SI 1	PE/SE or EIT		
10. Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms beans and structural slabs	N	P	ACI 318: 6.2	TA 1	ACI-STT		
11. Inspection of steel embedments: Anchor Bolts, Embed Plates, bond-outs for shear keys	Y	P	ACI 318	SI 1	PE/SE or EIT		

Concrete Construction has been reviewed in accordance with section 1704.4 of the IBC Code

Special Inspector_____ Date_____

To: Marge Schmuckal, Tom Errico, John Peverada, Jim Seymour, Eric LaBelle, Lucie Cote, Lt. MacDougal

From: Barbara Barhydt

RE: Waterveiw Apartments

Attached is the latest material be added to their previous submission. Please review the material and give me your comments. This item is scheduled for a workshop on October 26, 2004. Thank you.

MITCHELL & ASSOCIATES
LANDSCAPE ARCHITECTS

October 4, 2004

Ms. Barbara Barhydt, Planner,
And Planning Board Members
City of Portland
3—Congress Street
Portland, Maine 04101

Re: Waterview Apartments

Dear Barbara and Planning Board Members,

The following documentation has been prepared to address comments and concerns raised by Board Members and by Staff during the workshop session on August 31, 2004. A number of issues were raised including required parking, loss of existing on-site housing, affordable housing, alternative zone change option and height relationship to neighborhood structures. We have prepared the following comments to address each issue.

Required Parking:

Provision for required parking was the major focus of discussion. Issues included providing a long term commitment of parking spaces, availability of spaces 24 hours a day seven days a week, accessibility, document financial implication to provide parking under the proposed apartment building, documentation to support operation of a shuttle service and the immediate impact to on-street parking in the neighborhood. Since our first workshop session, the applicant has actively pursued alternative options to provide long-term parking. Two properties are being considered to address the parking requirements for the proposed apartment building.

Option A

The first is 380 Cumberland Avenue, the former AT&T switching facility located on the corner of Cumberland Avenue and Oak Street. A three-year option to purchase has been negotiated. The existing two-story building is 29,500 ± square feet. The first floor is a 15,067 ± vacant space; the second floor is 14,606 ± square feet. World Com leases 7,147 square feet on the second floor for operation of switching gear. The remaining 7,753 ± square feet is vacant and consist of two office spaces 1,850 square feet and 1,600 square feet, several large conference rooms and large restroom facilities. There is an existing surface parking lot with access to Casco Street and six spaces are available in a small lot off Oak Street that has access to the second level.

THE STAPLES SCHOOL
70 CENTER STREET
PORTLAND, MAINE 04101

Telephone (207) 774-4427
Fax (207) 874-2460
Website www.mitchellassociates.biz

To address required parking for the Waterview Apartments, the applicant is proposing to convert the first floor to a parking garage for tenants/owners and to restructure the existing on-grade parking lot. Access to the garage will be from an existing curb opening on Cumberland Avenue adjacent to Oak Street; thirty-five spaces will be developed within the building. In addition, three at grade spaces will be provided adjacent to the proposed entrance to the garage. The existing on-grade surface lot will be redeveloped to provide forty-seven stacked spaces with access to Casco Street. In addition, three of the spaces in the Oak Street lot would be available to Waterview while three spaces will be reserved for World Com technicians. The total number of new spaces available will be eighty-eight spaces.

The World Com facility is not a manned facility; service technicians are on-site at various times for service only and would only require three spaces at most at any one time. The applicant intends on maintaining the available lease space for use associated with development of the Waterview project.

Five handicap spaces and four full size spaces are proposed below the proposed apartment building, two of the full size spaces will be retained as short term unloading spaces. The total available spaces between the two sites would be ninety-five.

Option B

The second option is to lease a to be determined number of spaces in the Gateway Garage, if necessary, that has 650 parking spaces. Gateway Garage is located on the corner of Cumberland Avenue and Forest Avenue, diagonally opposite from the project. The applicant has been in negotiations with the owner of the garage to discuss availability of parking spaces. The garage currently leases spaces on a monthly basis and has spaces available for public parking during the day.

Accessibility:

Either of the two options would provide parking for tenants/owners within 100 feet or less of the building. The proximity to the project site would alleviate the need for a shuttle bus.

Financial Documentation Below Grade Parking:

The applicant has requested that Allied/Cook Construction, who is part of the design team, to prepare an analysis of the cost implications to construct below grade parking compared to surface parking and a structured parking facility. A copy of that letter is attached.

Shuttle Bus:

A shuttle bus service would no longer be required with required parking being provided within 100 feet of the proposed apartment building. No additional shuttle bus documentation will be required.

Impact to On-Street Parking:

The location of the parking within a short walking distance will eliminate the need to park on the street. The applicant has agreed that as part of the condominium documents, that tenants/owners will not be permitted to obtain neighborhood-parking stickers.

Affordable Housing

The applicant has expressed an interest in providing a percentage of affordable units. The ability to determine the number of units, if any, is dependent upon a funding source like Maine State Housing.

The existing twelve apartment units are not classified as qualifying as affordable units. We have had discussions with the city housing authority and will provide documentation separately.

Alternative Zoning

We were requested to review the option of using the R7 Compact Urban Residential Overlay Zone. We have reviewed the provisions of the R7 zone and they are too restrictive, a limited density based on lot size and a maximum height restriction prohibits the financial feasibility of developing the project. The density provision would only allow 24 units based upon the total site area. These limitations of the R7 zone necessitates the use of contract zoning to achieve a financially feasible project.

Height Relationship to the Neighborhood

The applicant presented a shadow and building massing study during the august 31, 2004 workshop session. The general nature of the immediate project neighborhood along Cumberland Avenue is structures that range in height from four to fifteen stories. The neighborhood along Forest and Mechanic Streets are primarily two and one half story residential single family and apartment structures. The impact of the proposed building has a minimal increase in shadow lengths on the neighborhood and the building has been set back from the property line adjacent to the residential structures to provide a separation and buffer. The current height limits in the B3c zone permits a structure to be 85 feet in height 100 feet back from the centerline of Cumberland Avenue.

We trust that we have addressed a number of the board's comments and look forward to the continued dialogue with the board and staff. Should you have any questions, please do not hesitate to call me.

Sincerely,
Mitchell & Associates

Robert B. Metcalf

Enclosure

Cc Jeff Cohen
Catherine Cofran
Ben Walter

ALLIED/COOK
CONSTRUCTION
Planners • Managers • Design/Builders
Building Excellence Since 1958

October 1, 2004

Mr. Jeffrey N. Cohen
Time & Temperature Building
477 Congress Street
Portland, Maine 04101

Dear Jeff,

We are very pleased to be working with you on your new 12-story 94-unit residential condominium project to be located on the corner of Cumberland Avenue and Forest Avenue in Portland.

You instructed us to research and review costs for structured parking with a focus on underground parking. We do not have extensive geotechnical information at this point for your site, but we believe that the cost for underground parking will run from $30,000 to $50,000 per space.

This compares with a cost for surface parking that should be around $1500 to $2500 per space, and above ground structured parking that should be in the area of $12,000 to $15,000 per space.

Thank you again Jeff for this opportunity.

Best regards,

George L. Liming, CPE
Vice President-Preconstruction Services

cc: Tom Perry – Allied/Cook

OFFICE: P.O. BOX 1396 • PORTLAND, ME 04104
207-772-2888 • FAX 207-885-5135 • Email: info@alliedcook.com

"The Waterview at Bayside Condominium

Applicant: Waterview Development Date: 11/10/05

Address: 409 Cumberland Ave C-B-L: 36-H-025 → 025

CHECK-LIST AGAINST ZONING ORDINANCE

Date - New Development #05-1279

Zone Location - C3B Contract Zone (Attached

Interior or corner lot -

Proposed Use/Work - To Construct 94 → max permitted by contract residential condominium D.U. — 12 Stories 144,275 ft

Sewage Disposal - City

Lot Street Frontage - N/A

Front Yard - None req Cumberland Ave

Rear Yard - 20' min - 22' shown - Northerly property line

Side Yard - None req - mechanic & Forest

Projections -

Width of Lot - N/A

Height - 12 Stories - 127' Along Cumberland Ave & 144 at rear of Bldg Along mechanic St

Lot Area - 18,008 ft

Lot Coverage/ Impervious Surface - None req -

Area per Family - N/A

Off-street Parking - Determined by P.B because 144,275 ft of New Structure ~~1 space per Unit~~ per contract - A min of 119 pkg SPACES provided See contract for location breakdown

Loading Bays - N/A

Site Plan - Major Subdivision #2005-0033

Shoreland Zoning/ Stream Protection - N/A

Flood Plains - Panel 13 - Zone C.

Relocation of tenants are required by contract

Part II
Division 2

Excavation

SECTION 02050

DEMOLITION

1 PART 1. GENERAL

1.1 SECTION INCLUDES

A. Demolition shall include, unless otherwise noted on Drawings, removal of existing objects or improvements, whether indicated on drawings or not, that would, in the opinion of the owner, prevent or interfere with progress or completion of proposed work.

B. Permits, fees and licenses shall be secured and paid for by Contractor, including disposal charges as required to ensure progress of work will proceed.

C. Work shall comply with requirements of governing authorities in demolition and removal of existing pavement, curbs and gutters, drainage structures, underground fuel tanks, sanitary waste systems
and utilities as may be required.

D. Demolition requires removal and disposal charges as required to ensure progress of work will proceed.

1. Entrance drive, parking pavement and adjacent landscape work to limits indicated on Drawings, or as required by Specifications.

2. Removal of existing wood frame structures in accordance with local requirements and environmental assessment report.

3. Removal of existing perimeter, fencing as noted on the Demolition Plan.

4. Remove existing sanitary service connections, gap service in compliance with City of Portland Standards.

5. Terminate existing electric, telephone and cable services, coordinate with respective utility companies.

6. Terminate existing gas services, coordinate with Northern Utilities.

1.2 RELATED REQUIREMENTS

A. Construction Drawings

B. Geotechnical Report, Environmental Phase 1 and Building Environmental Phase 1.

C. Coordination with public utilities

1.3 JOB CONDITIONS

A. Owner assumes no responsibility for condition of structures or site elements to be demolished or removed.

B. Owner will maintain conditions existing at time of inspection for bidding purposes in so far as practicable.

3 PART III EXECUTION

3.1 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from the site all debris, rubbish and other materials resulting from demolition.

B. Demolition debris removed from the site shall be disposed of at an approved licensed recycling or disposal facility in accordance with state regulations.

C. No burning of any materials, debris or trash on-site will be allowed, except when allowed by the appropriate governing authority. If allowed as stated above, burning shall be performed in a manner prescribed by governing authority. Attend burning materials until fires have burned out or have been extinguished.

END OF SECTION

SECTION 02110

EROSION AND SEDIMENTATION CONTROL

This Plan has been developed as a strategy to control soil erosion and sedimentation during and after construction of the Waterview at Bayside Condominium located at 409 Cumberland Avenue in Portland, Maine. This plan is based on the Maine Erosion and Sedimentation Control Handbook for Construction, Best Management Practices, March 2003.

1.1 PROPOSED DEVELOPMENT

The project consists of the development of a 10,779 square foot twelve story apartment and condominium building with a total of 94 units. The primary pedestrian access to the building will be form Cumberland Avenue, although pedestrian access can occur from three sides of the building. Vehicular access to the site will be from Forest Avenue and a drop-off area will be along the Forest Avenue side of the building. All vehicles will exit the site onto Mechanic Street. Due to the sloping site, handicap accessible and temporary parking will be provided beneath the building. Parking for the project will be provided at the Gateway Garage.

The access drive, building, drainage improvements and site improvements and associated grading define the limits of proposed earth movement for the development. The horizontal and vertical placement of the access drive, walkways and seating areas has been designed to maximize the topographic opportunities available.

1.2 EROSION CONTROL PRACTICES / TEMPORARY MEASURES

The following temporary measures to control erosion and sedimentation shall be utilized:

A. Each ground area, opened or exposed, whether directly or indirectly due to the development, shall be minimized and shall be stabilized within 15 days of initial disturbance of soil and shall be permanently stabilized within seven days of final grading.

B. Temporary soil stabilization shall be either by temporary mulching, permanent base gravel, or as follows:

- Temporary Mulching. Mulch shall consist of chopped hay or straw mulch and spread by mechanical blower evenly at a rate of 150-200#/1000 SF. Temporary mulch shall be removed prior to permanent soil stabilization. Mulch must not be placed over snow. Snow shall be removed prior to mulching.

- Erosion Control Mix. Processed wood chip and soil mix, spread along areas of site adjacent to residential properties.

- Permanent Base Gravel. Base gravel shall be suitable as temporary soil stabilization under the following conditions:

  a. Slopes shall be less than eight percent.
  b. Gravel shall meet the specifications for base or subbase gravel for the proposed completed surface.

B. Winter Construction. The winter construction period is from November 1 through April 15. Winter excavation and earthwork shall be competed such that no more than 1 acre of the site is without stabilization at any one time. Limit the exposed area to those areas in which work is expected to be undertaken during the proceeding 15 days and that can be mulched in one day prior to any snow event. Hay and straw mulch rates shall be a minimum of 150#/1000 SF (3 tons/acre) and shall be properly anchored. The contractor must install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized in order to minimize areas without erosion control protection.

1.4 CONSTRUCTION SEQUENCE

The general sequence of work shall be as follows:

A. Install erosion control devices (silt fence, stabilized construction entrance and or Sediment barrier). Note: when frozen ground conditions exist, silt fence shall be replaced with wood-waste filter berms.

B. Site Demolition; remove all existing structures, pavement and site appurtenances.

C. Temporarily stabilize disturbed areas by mulching all exposed soil within 15 days of initial disturbance.

D. Rough grade and install road/pavement base.

E. Install underground utilities.

F. Install stormwater structures and associated piping.

G. Complete site construction work.

H. Install permanent vegetation on all exposed areas within 15 days of final grading.

I. Perform continuing maintenance on all erosion and sedimentation control devices and measures.

1.5 SITE INSPECTION & MAINTENANCE

Weekly inspections, as well as routine inspections following rainfalls of 0.5" over a consecutive 24-hour period, shall be conducted by the Site Contractor, of all temporary and permanent erosion control devices until final acceptance of the project. Necessary repairs shall be made to correct undermining or deterioration. Final acceptance shall include a site inspection to verify the stability of all disturbed areas and slopes. Until final inspection, all erosion and sedimentation control measures shall immediately be cleaned, and repaired by the General Contractor after storm events. Disposal of all temporary erosion control devices shall be the responsibility of the Site Contractor.

Continued temporary maintenance and long-term provisions for permanent maintenance of all erosion and sedimentation control facilities after acceptance of the project shall be the responsibility of Waterview Development LLC, or Assigns.

SECTION 02200

SITE EARTHWORK

1 PART 1. GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Geotechnical Report – Section 00300

C. Site Drainage - Section 02400

D. Site Utilities - Section 02420

E. Construction Drawings - Refer to architectural plans and specifications for specific requirements regarding the earthwork beneath the building. Where the architectural plans earthwork requirements for the building subgrade pad are more stringent than those stated herein, the architectural plans and specifications shall govern.

1.2 UTILITY EASEMENTS

A. The Contractor shall contact all utility companies and determine if additional easements will be required to complete the project.

1.3 STANDARDS

A. Conform to all applicable city, county and state codes for excavation, earthwork and disposal of debris.

B. Conform to all applicable standards of the various utility companies.

1.4 INSPECTION

A. Drawings do not purport to show above ground objects existing on site. Contractor shall visit site and acquaint himself with all observable conditions as they exist before submitting his Bid.

1.5 GRADE AND ELEVATIONS

A. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interference or to adapt piping to other special conditions encountered.

B. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain by means of suitable stakes placed in the field.

D. Field density tests not specified on a comparative basis shall be to the percent density specified in this Section for both earth excavation and earth and granular type fills. Tests shall be in accordance with ASTM D.1556, ASTM D.2167, ASTM D.2922 OR ASTM D.3017.

1.10 TEST PITS

A. Test Borings have been made in the area of the proposed building and parking area and the logs can be reviewed in Section 00300.

1.11 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Barricade open excavations occurring as part of this work and post with warning signs. Backfilling or secured covering of excavations shall be required.

B. Provide necessary supports, bracing and covering to protect existing and new structures and utilities during all phases of excavation and backfill.

C. Notify appropriate owners before excavating adjacent to poles, cables, pipes, and other utilities.

D. Note that location of existing underground utilities on plans is approximate and may be incomplete. Responsibility for exact locations and protection of all utilities rest with the Contractor. The Contractor shall be responsible for confirming invert elevations for existing and proposed sewer installation and connection. Where location of existing underground utilities differs from that shown on plans, notify the Landscape Architect immediately.

E. Conflicts between existing and new utilities and/or structures to be built under this contract shall be reported to the Landscape Architect or Owner's Representative.

1.12 EROSION AND SEDIMENTATION CONTROL

A. The General Contractor shall perform all work necessary to control erosion. Installation of erosion control structures prior to construction shall be performed in accordance with the Standards of the U.S. Department of Agriculture, Soil Conservation Service, "Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices" by the Cumberland County SWCD, State of Maine, and as shown on the Plans.

B. Weekly inspections, as well as routine inspections following rain falls, shall be conducted by the Contractor of all temporary and permanent erosion control devices until final acceptance of the project. Necessary repairs shall be made immediately to correct undermining or deterioration. Final acceptance shall include a site inspection to verify the stability of all disturbed areas and slopes. Until final inspection, all erosion and sedimentation control measures shall immediately be cleaned, and repaired by the Contractor after each storm event, as required. Disposal of all temporary erosion control devices shall be the responsibility of the Contractor. Removal of temporary erosion control devices shall not occur until a minimum 75% catch of vegetation occurs or permanent structural measures are in place.

1.13 REMOVALS

A. The Contractor shall perform all work necessary for clearing and grubbing and/or removal, backfill and disposal of all existing materials noted on the Drawings, as well as temporary structures installed for construction.

B. Where ordered by the Landscape Architect to stabilize the trench base or for excavation below grade, use 3/4 inch crushed stone.

C. PVC Pipe and Polyethylene Pipe: Use 1/2 inch to 1 inch crushed stone in the zone twelve (12) inches above and six (6) inches below the pipe.

(3) Sand Blanket

A. Use (over and under insulation) where insulation is installed over pipe or culvert and at such other places as required in the Contract Documents, or when ordered by the Landscape Architect. Clean sand, free from organic matter, so graded that 90 - 100 percent passes a 1/2 inch sieve and not more than 7 percent passes a No. 200 sieve. (**Exception:** For corrugated polyethlene pipe where crushed stone is required over top of pipe).

(4) Suitable Backfill Material

A. Structural fill or natural material excavated during the course of construction, excluding debris, pieces of pavement, organic matter, topsoil, all wet or soft muck, peat, or clay, all excavated ledge material, and all rocks over six (6) inches in largest dimension, or any material which will not provide sufficient support or maintain the completed construction in a stable condition, all approved by the Landscape Architect. (**Exception:** may not be used to backfill foundation or under slab).

(5) Geotextile Materials

A. Acceptable Geotextiles and Geogrids:

(1) Mirafi 600x
(2) Phillips 66 Supac 6WS
(3) Dupont Typar 3401 and 3601
(4) Trevira S1114 and S1120
(5) AMOCO 2006
(6) Tensar SS-1 and SS-2
(7) Exxon GTF-200 or 350
(8) Conwed Stratagrid GB-5033
(9) Miragrid 3xT

B. Filter/Drainage Geotextiles:

(1) Mirafi 160N or equal

C. Silt Fencing Geotextiles:

(1) Mirafi 100x or equal

indicated limits. Only suitable materials shall be used or stockpiled for later use in backfill preparation. Disturbed subgrade material shall be removed prior to pouring of footings and replaced with either compacted structural fill or thickened footing concrete. All footing subgrades shall be approved by the owner's representative prior to pouring concrete for footings.

B. The Contractor shall provide temporary drains, ditches and the necessary equipment, as required, to maintain the site of work and adjacent areas in a well drained condition. Keep all excavations free of both ground and surface water at all times. All water pumped or drained from the work shall be disposed of so as not to endanger public health, property or any portion of the work under construction or completed.

C. The Contractor shall provide shoring, sheeting and bracing as may be required to maintain excavations and trenches secure and safe from collapse and to protect adjacent structures.

D. Excavation shall not be made below specified subgrades except where rock or unstable material is encountered. If suitable bearing is not found at levels shown on the Drawings, the Architect and or the Landscape Architect shall be notified in writing immediately so that adjustments or changes may be made. Material removed below specified subgrade without the approval of the Landscape Architect shall be replaced and compacted with an approved gravel at the Contractor's expense.

E. All work shall be carried out in a manner consistent with the regulations of such Federal, State and Local authorities as may have jurisdiction over such activities.

3.4 SUMMARY OF UTILITY INSTALLATION

A. Set all lines, elevations and grades for utility and drainage system work and control system for duration of work, including careful maintenance of bench marks, property corners, monuments or other reference points.

B. Perform all excavation for underground piping and utility systems to the depths indicated on the Drawings or as otherwise specified. Trenches shall be excavated by open cut.

C. Maintain in operating condition existing utilities, active utilities and drainage systems encountered in utility installation. Repair any surface or subsurface improvements shown on Drawings.

D. Verify location, size, elevation and other pertinent data required to make connections to existing utilities and drainage systems as indicated on Drawings. Contractor shall comply with local codes and regulations.

E. Inspection of stormwater system excavation, utility excavation and backfilling subject to review by utility company, city engineer and third party inspection by project engineer.

3.5 EXCAVATION, TRENCHING AND BACKFILLING

A. Perform excavation as indicated for specified depths. During excavation, stockpile materials suitable for backfilling in an orderly manner far enough from bank of trench to avoid overloading, slides or cave-ins.

(4) Electrical Conduits: 40 inches minimum to top of conduit for primary and 30 inches to top of conduit for secondary or as required by NEC 300-5, NE 710-36 codes, or the local utility company requirements, whichever is deeper.

(5) TV Conduits: 18 inches minimum to top of conduit or as required by the local utility company, whichever is deeper.

(6) Telephone Conduits: 18 inches minimum to top of conduit, or as required by the local utility company, whichever is deeper.

3.7 PIPE BEDDING

A. Accurately cut trenches for pipe or conduit that is to be installed to designated elevations and grades to line and grade as specified below bottom of pipe and to width as specified. Place specified depth of bedding material, compact in bottom of trench, and accurately shape to conform to low portion of pipe barrel. After pipe installation, place select bedding material in accordance with details and compact as required.

3.8 TRENCH BACKFILLING

A. Criteria: Trenches shall not be backfilled until required tests are performed and the utility systems comply with and are accepted by applicable governing authorities. Backfill trenches as specified. If improperly backfilled, reopen to depth required to obtain proper compaction. Backfill and compact as specified, to properly correct condition in an acceptable manner.

B. Backfilling: After pipe or conduit has been installed, bedded, and tested as specified, backfill trench or structure excavation with specified material placed in eight (8) inch maximum loose lifts.

C. Fill shall not be placed on a surface of frozen material, nor shall snow, ice, frozen earth or debris be incorporated in the fill. Compact to minimum density of 95% of maximum dry density in accordance with ASTM D 698 (or 92% of maximum dry density in accordance with ASTM D1557). For utility trenches located in pavement and sidewalk areas, place backfill in eight (8) inch maximum loose lifts and compaction to 95% of ASTM D.1557 maximum dry density.

3.9 STRUCTURAL EXCAVATION

A. Earth shall be excavated to the depth and sections required for installation of all catchbasins, manholes, footings, floor slabs or other appurtenant facilities to the extent indicated on the Plans. Care shall be taken that the foundation areas of structures are not excavated below subgrade or are disturbed so as to lessen their bearing capacity.

B. All excavations for structures shall be sheeted, braced, sloped, or otherwise protected in the same manner and meeting the safety requirements and conditions specified above under paragraph Section 3.6 (b). Any excess excavated material shall be removed from the site.

3.10 ROCK EXCAVATION

A. Soils investigations indicate that removal of rock will not be required for this project. The Contractor shall take the following steps:

(1) Uncover and expose material claimed as rock.

with a surface suitable for laying the pipe or building structure. Following their use, underdrains shall be plugged as directed by the Landscape Architect.

3.12 COMPACTION

A. Compaction densities specified herein shall be the percentage of the maximum dry density obtainable at optimum moisture content as determined and controlled in accordance with ASTM D.1557. Field density tests shall be made in accordance with ASTM D.1556, D.2167 or D.2922. Each layer of backfill shall be moistened or dried as required, and shall be compacted to the required densities unless otherwise specified in the project specifications.

B. Fills placed under footings, floor slabs, roads, parking areas and walks shall be compacted to not less than 95 percent of the ASTM D - 1557 maximum dry density.

C. The subbase material placed under the road gravel base in fill areas shall be compacted to not less than 95 percent of the ASTM D1557 maximum density.

D. Fills adjacent to building walls from the exterior face of the building and/or retaining walls to a point not less than 10'-0" from the exterior face of the wall shall be compacted to not less than 95 percent of the ASTM D. 1557 maximum compaction dry densities as herein before specified.

E. Bedding material and trench sand under pavement: 95%

F. Bedding material and trench sand non-pavement areas: 92%

G. Loam areas: 90%

H. All other areas: 85%

I. Methods and equipment proposed for compaction shall be subject to the prior acceptance by the Owner's representative. Compaction generally shall be done with vibrating equipment. Refer to recommendations in the Geotechnical Report in Section 00300 by Hale & Aldrich, Inc., dated March 2005. Displacement of, or injury to the pipe and structure shall be avoided. Movement of in-place pipe or structures shall be at the Contractor's risk. Any pipe or structure damaged thereby shall be replaced or repaired as directed by the Landscape Architect and at the expense of the Contractor.

3.13 FILLING AND SUBGRADE PREPARATION - BUILDING AREA

A. The recommendations for filling and subgrade preparation for the building area shall be in accordance with the Geotechnical Report, prepared by Haley & Aldrich, Inc. dated March 2005.

B. Building subgrade pad shall be that portion of site directly beneath and ten feet (10') beyond the building and appurtenant limits.

C. Unless specifically indicated otherwise on the Drawings, areas exposed by excavation or stripping and on which building subgrade preparations are to be performed, shall be compacted to a minimum of 95% of the Modified Proctor Maximum Dry Density (MPMDD). Building floor slab subgrades consisting of native sands, silty sands shall be compacted with a 15 ton highway roller to achieve 95% of MPMDD to a minimum of 12 inches.

B. Correct all settlement and eroded areas within one year after date of completion at no additional expense to Owner. Bring grades to proper elevation. Replant or replace any grass, shrubs, trees or other vegetation disturbed by construction using corrective measures.

3.16 FIELD QUALITY CONTROL

A. If Owner elects to test, an independent testing laboratory selected and paid by the Owner shall be retained to perform construction testing on site. Field density test may be ordered for each foot of depth of backfill at an average of 200 feet along the trench.

B. If compaction requirements are not complied with at any time during the construction process, remove and recompact deficient areas until proper compaction is obtained at no additional expense to Owner.

C. The independent testing laboratory shall prepare test reports that indicate test location, elevation data and test results. The Owner, Architect and Contractor shall be provided with copies of reports within 72 hours of time test was performed. In the event that any test performed fails to meet these Specifications, the Owner and Contractor shall be notified immediately by the independent testing laboratory.

D. All costs related to retesting due to failures shall be paid for by the Contractor at no additional expense to the Owner. The Owner reserves the right to employ an independent testing laboratory and to direct any testing that is deemed necessary. Contractor shall provide free access to site for testing activities.

3.17 TESTING

A. Field density test may be ordered by the Landscape Architect for each foot of depth of backfill at an average interval of 200 feet along the trench.

B. The Contractor shall furnish all necessary samples for laboratory tests and shall provide assistance and cooperation during field tests. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.

C. Any costs of re-testing required as a result of failure to meet compaction requirements shall be borne by the Contractor.

3.18 WORK IN PUBLIC STREETS

A. Work done in existing Municipal streets shall be done in accordance with local and/or State requirements as applicable.

3.19 CLEAN-UP

A. The Contractor shall remove all debris, construction equipment, and material from the areas to be loamed and seeded.

END OF SECTION

SECTION 02400

SITE DRAINAGE

1 PART 1. GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Geotechnical Report Site Environmental Phase 1 and Existing Building Environmental Phase 1 - Section 00300

C. Site Earthwork - Section 02200

D. Site Utilities - Section 02420

E. Construction Drawings

1.2 QUALITY ASSURANCE

A. It is the intention of this Section that the catchbasins, manholes, field inlets and other structures, including all component parts, have adequate space and strength considered necessary for the intended service. Space requirements and configurations shall be as shown on the Drawings.

B. Catchbasins and manholes shall be an assembly of precast sections with or without steel reinforcement, with approved jointing. In any approved structures, the complete structure shall be of such material and quality as to withstand loads of eight (8) tons (H-20 loading) without failure, continuously for the life of the structure. Assume a period in excess of 25 years for all structures.

1.3 SUBMITTALS

A. The Contractor shall submit the following information with sets of As-Built Drawings:

(1) Shop Drawings of pipe and precast units, catchbasins, manholes and field inlets.

(2) Manufacturer's information of joint sealants, gaskets and waterproofing.

(3) Storm drain pipe. Pipe of the same manufacturer shall be used throughout the project.

(4) Frame and grate for all structures, frame and grate for structures within the public right of way shall conform to the City of Portland Technical Design Standards and Guidelines, latest edition.

(5) Source and gradation reports for soil materials.

(6) Manufacturer's information of physical, filtration/hydraulic, and mechanical properties of geotextile fabrics.

(1) Polyvinyl Chloride (PVC) Pipe: Pipe and fittings shall comply with ASTM D 3034, rated SDR 35. Pipe shall be continually marked with manufacturer's name, pipe size, cell classification, SDR rating, and ASTM D 3034 classification. Pipe joints shall be integrally molded bell ends in accordance with ASTM D 3034, Table 2, with factory supplied elastomeric gaskets and lubricant.

(2) Reinforced Concrete Pipe (RCP): Comply with requirements of ASTM C 76, Class III unless another class type is indicated on Drawings, installed with flexible plastic (Bitumen) gaskets at all joints. Gaskets shall comply with AASHTO M-198 75I, Type B, and shall be installed in strict accordance with pipe manufacturer's recommendations.

(3) Corrugated Polyethylene Pipe (CPP) Smooth Interior: Conform with AASHTO Designations M 294 and M252. Pipe must be installed in accordance with pipe manufacturer's installation Guidelines for Culvert and Other Heavy-Duty Drainage Applications. Acceptable manufacturers: Advanced Drainage Systems, Inc. (ADS) N-12) & Hancore, Inc. (Hi-Q smooth interior).

(4) Foundation Drains and Underslab Drains: Pipe shall be perforated PVC pipe having a SDR of 35 or equivalent. Perforations shall consist of 3/8 inch diameter holes.

C. Brick: Comply with the ASTM Standard Specifications for Sewer Brick, Designation C32, for Grade SS, hard brick.

D. Cement: Shall be Type II. Concrete shall have a minimum strength of 3,000 psi at 28 days.

E. Structural Fill for foundation drain backfill - M.D.O.T. 703.06, (a), Type C.

F. Drainage Stone: M.D.O.T. 703.22 Type C. 3/8 - inch, pea stone or 3/4- inch crushed stone

G. Geotextiles: Shall be Mirafi 160 N or equivalent for filtration fabric or equivalent.

3 PART 3. EXECUTION

3.1 CATCHBASINS, MANHOLES, AND FIELD INTLETS

A. After the excavation has been done and leveled, six (6) inches of bedding material shall be put in the bottom of the excavation, leveled and thoroughly compacted.

B. Precast concrete sections shall be set so as to be vertical and with section in true alignment, 1/4-inch maximum tolerance to be allowed.

C. Invert channels of manholes may be formed in 3,000 psi concrete or using brick. When brick is used, use Portland cement, ASTM C 150, Type II. Masonry cements shall not be used. The top shelf shall slope to drain towards the flowing through channel.

D. The top of the precast reinforced concrete unit shall be set at a grade that will allow a minimum of two (2) courses and a maximum of three (3) courses of brick and mortar before setting the cast-iron frame. Mortar for brick masonry shall be Portland cement, Type II, mixed in the proportion of one part cement to two parts sand, worked to the proper consistency.

B. Lay each pipe length so it forms a close joint with the adjoining length and bring the inverts to the required grade, without high spots. Do not drive the pipe down to grade by striking it with a shovel handle, timber, hammer, or any other unyielding object. When each pipe length has been properly set, place and compact enough of the bedding material between the pipe and the sides of the trench to hold the pipe in correct alignment. After filling the sides of the trench, place and lightly tamp bedding material to complete the bedding as shown on the Drawing. Take all necessary precautions to prevent floatation of the pipe in the trench.

C. Temporary Plugs - When pipe installation work in trenches is not in progress, close the open ends of the pipe with temporary watertight plugs. If water is in the trench when work is resumed, do not remove plugs until all danger of water entering the pipe is eliminated. Do not use the pipelines as conductors for trench drainage during construction.

D. Jointing - Connect pipe in accordance with the latest manufacturer's instructions and recommendations. Clear each pipe length, coupling and fitting of all debris and dirt before installing. Provide and use coupling pullers for jointing the pipe. Provide gasket feeler gauges for use by the pipe layer for checking the position of the rubber gaskets in the completed joints.

E. Shove home each length of pipe against the pipe previously laid and hold securely in position. Do not pull or cramp joints. Make all pipe joints as watertight as possible with no visible leakage and no sand, silt, clay, or soil of any description entering the pipeline at the joints. Immediately after making a joint, fill the holes for the joints with bedding material, and compact.

F. Pipe Cutting - Cut in accordance with manufacturer's recommendations. Cut the pipe with a hand saw, metal-inserted abrasive wheel or pipe cutter with blades (not rollers). Examine all cut ends for possible cracks caused by cutting.

G. Inspection - Pipe installation shall be subject to inspection by the project Landscape Architect or Owner's representative, for quality, adherence to line and grade, jointing, and proper backfill. Any joint not satisfactory to the project Landscape Architect or Owner's respresentative shall be removed and remade to his satisfaction at the Contractor's expense. No pipe shall be backfilled until it has been approved by the Landscape Architect.

3.4 FOUNDATION DRAIN PIPE

A. Bed all foundation drains in Drainage Stone, wrapped in Mirafi 160 N geotextile filter fabric or approved equal, as shown on the drawings.

B. Shape subgrade to drain outlets as shown on the grading and drainage plan.

C. Install geotextile stabilization fabric between subgrade and pavement subbase gravel, as determined by the geotechnical engineer or Owner's Representative.

3.5 PIPE INSULATION

A. Install two (2) inch thick by four (4) feet wide styrofoam SM insulation as manufactured by Dow Chemical Co., or approved equal, as shown on Detail Drawing.

B. Install over and along the sides of the pipe when there is less than four (4) feet of cover between the top of pipe and original ground grade.

SECTION 02470

DRILLED SHAFTS/PIERS

PART 1. GENERAL

1.1 General Requirements

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 Description of Work

A. General

1. The Work covered by this Section, without limiting the generality thereof, consists of furnishing all plant, labor, equipment, appliances and material and performing all operations in connection with the installation of foundations to support column loads with fully cased rock socketed drilled shafts/piers to the lines and grades shown on the Drawings.
2. The Contractor shall include all Work necessary to maintain a stable excavation during drilling and concreting.

B. The work under this section within shall include installing a permanent steel casing as shown on the drawings in order to provide an outer sleeve for drilling and shaft/pier construction.

C. The Contractor shall manage drill spoils generated from shaft/pier installation. Drill spoil solids will be removed from the site, and disposed by the Contractor.

D. Installation of reinforcing as shown on the drawings and placement of tremie concrete from the bottom of each shaft to cut-off elevation.

E. The Contractor shall protect adjacent buildings, property, streets, public utilities and structures, and completed work, from damage associated with excavation operations.

F. Remnants of old utilities, foundations, walls, slabs, and other buried structures may exist within the site area and may be encountered during drilled shaft/pier excavation.

G. Prior to shaft/pier construction, determine location of utilities. Protect, maintain and/or relocate according to Drawings, utilities interfering with shaft/pier construction.

H. Support and protect utilities if and as necessary. The Contractor shall be responsible for all damage to utilities caused by shaft/pier construction operations. Fully and promptly

C. The Contractor shall be aware that cobbles and boulders could be encountered within the glacial till soil strata and shall develop appropriate means and methods to remove them from excavations if/when they are encountered.

1.6 Quality Assurance

A. Comply with all rules, regulations, laws and ordinances of the State of Maine, City of Portland and all other authorities having jurisdiction. All labor, materials, equipment and services necessary to make work comply with such requirements shall be provided without additional cost to Owner.

B. Field Monitoring and Testing

1. Full-time monitoring of the Work of this Section will be provided by the Owner. No Work shall be completed except in the presence of an authorized representative of the Owner's Representative.
2. The Owner will provide on-site monitoring of concrete placement. Concrete test cylinders will be taken by the Owner's Testing Agency during placement. The Contractor shall fully cooperate with the Owner's Testing Agency to facilitate obtaining and storing samples.

C. Approvals given by the Owner's Representative or by testing agencies shall not relieve the Contractor of the responsibility for performing the Work in accordance with the Contract Documents.

1.7 Lines and Grades

A. The Contractor shall stake the locations of the foundations and establish all elevations required. A baseline and benchmark located on or close to the site will be provided by the Owner. The Contractor shall be responsible for the maintenance and protection of the baseline and benchmark, and all location stakes.

B. The Contractor shall employ a licensed Registered Land Surveyor or a Registered Civil Engineer, who shall establish lines and levels. The Contractor shall be responsible for the correct location of foundations and establishing actual locations. Locations of the centers of completed units shall be shown on a drawing in relation to the design location and submitted to the Engineer and Owner's Representative within two days after completing the unit. Drawings certified by said Surveyor or Engineer shall include the following:

1. Column lines and north arrow.
2. Each foundation element identified by a separate number.
3. Elevation of the foundation bearing surface to nearest 0.1 foot.
4. Deviation in inches, to the nearest one-half inch, from plan location at cutoff elevation.

1.8 Submittals

A. All submittals shall be submitted to the Owner's Representative for review at least 3 weeks prior to the start of the Work. Submittals shall be prepared and stamped by a Licensed Professional Engineer registered in the State of Maine, retained by the Contractor.

b. Plan dimensions of the shaft/pier, and top and bottom elevations.
c. Dates and times of shaft/pier excavation, bottom cleaning, reinforcing steel placement, tremie concreting, and volume of concrete placed.
d. Description of soils encountered, description of obstructions and excavation problems, if any, and the time spent.
e. Description of steel reinforcing, threaded inserts, variations from shop drawings, if any.
f. Plumbness and deviation from plan location.

2. During drilled shaft/pier construction, any unusual conditions encountered shall be noted and reported to the Owner's Representative immediately.

PART 2. PRODUCTS

2.1 Materials

A. Concrete for use in drilled shaft/pier shall conform to Section 03300, unless otherwise indicated hereinafter in this Section.

B. Reinforcing steel for use in drilled shafts/piers shall be ASTM A615 Grade 60.

2.2 Concrete

A. The design and testing of concrete mixes for use in drilled shafts/piers shall conform to the requirements of specification section 03300.

1. Minimum compressive strength of 4,000 psi at 28 days.
2. See specification section 03300 Cast-in-place Concrete for additional requirements.

2.3 Reinforcing Steel

A. Reinforcing steel shall be standard deformed steel reinforcing bars conforming to the requirements of ASTM A615, Grade 60.

PART 3. EXECUTION

3.1 General

A. Foundation elements shall be installed by a contractor specializing in the type of work described hereinafter, having experience on similar installations under similar soil, rock and groundwater conditions.

B. The Contractor shall provide a fully equipped excavation rig in full-time operation at the site during the Work, and shall mobilize additional equipment, if necessary, to complete the Work on schedule.

C. The Contractor shall coordinate foundation installation operations with other work on the project.

D. Drilling shall be made in such a manner to prevent loss of ground beyond the specified diameter. The drilling operation shall employ the use of a permanent casing. The permanent casing shall extend a minimum depth of 1 ft.-6 in. below the top of the rock.

3.3 Rock Socket Construction

A. Shafts/piers shall be drilled into the rock to depths as given on the shaft/pier schedule shown on the Drawings or as directed by the Owner's Representative.

B. Suitable rock is defined as hard to moderately hard, slightly weathered Phyllite. Based on review of test boring logs, the top few feet (1 to 2 ft.) of rock may be highly weathered and unsuitable for foundation support.

3.4 Placing Reinforcing Steel and Concrete

A. Do not place steel or concrete until the drill hole has been evaluated by the Owner's Representative.

B. Maintain minimum three inch clearance between and sides of excavation and reinforcement.

C. Prior to placing concrete and reinforcing steel, the bottom of the shaft/pier shall be cleaned of all loose material using equipment designed for that purpose or similar equipment acceptable to the Owner's Representative.

D. Reinforcing steel assemblies shall be accurately located and securely held in place prior to and during the concreting. As the steel cage is lowered into the shaft, suitable guides and spacers, such as concrete skids, shall be used. If the sides of the rock socket are disturbed during installation of the reinforcing steel such that loose rock fragments are found to have accumulated on the bottom of the shaft/pier, the Contractor shall reclean the bottom of the excavation.

E. Concrete shall be placed by tremie pipes, either by gravity flow or by pumping, in such a manner that the concrete fills the shaft/pier progressing from the bottom, rising uniformly to the cutoff elevation and such that intermixing of the concrete and any accumulated water will not occur. The tremie pipe shall be kept as close to the center of the shaft as possible. The tremie pipe shall be suitably made to prevent mixing of the concrete and any accumulated water and shall be of adequate size to permit the free flow of concrete. Initially, there shall be a suitable plug at the bottom of the tremie, which will not discharge concrete until the concrete head has at least reached the level of any accumulated water/fluid in the shaft/pier. Thereafter, a positive concrete head will be maintained throughout.

F. The bottom of the tremie pipe shall be embedded at least 5 ft into the concrete during placement, and this depth shall be maintained throughout the pour.

G. The concrete level during placement shall be kept essentially horizontal.

H. Concrete shall be placed in the drill shaft hole within two hours after placement of reinforcing steel cage and shall proceed continuously until completion of the concreting.

C. No separate measurement for payment will be made for acquisition of permits, backfill, equipment, material disposal, police details, water, electricity, construction dewatering, stockpiling, material rehandling, vibration monitoring, surveying, or other associated items or work considered incidental to the conduct of foundation construction.

D. Whenever mislocation, misalignment, or rejection of a drilled shaft necessitates a structural redesign, the costs of such redesign will be deducted from sums otherwise due to the Contractor under the Contract.

E. Whenever misalignment or rejection of a drilled shaft necessitates structural redesign and/or creation of a cap beam and the redesign structure requires greater quantities of concrete and reinforcing steel, the quantities required will be compared with the quantities required for the original design and the additional labor, equipment, and material will be provided at no additional cost to the Owner.

F. For drilled shafts/piers required and directed by the Architect or Owner's Representative to be drilled deeper into rock than specified on the Contract Documents, the Contractor shall be paid at a unit price per foot of shaft in rock as provided by the Contractor at the time of the bid.

END OF SECTION

SECTION 02471

ROCK ANCHORS

PART 1. GENERAL

1.1 Work Overview

A. Examine all of the Contract Documents to assess full extent of the Work.

B. Coordinate work with that of all other trades affecting or affected by work of this section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 Related Sections

A. Earthwork is specified in Section 02200.

B. Concrete is specified in Section 03300.

C. Reinforcing steel is specified in Section 03300.

1.3 Description

A. The work to be done under thus section includes drilling, furnishing, delivery, unloading, storing, installation, stressing and securing the 140 kip minimum design load permanent rock anchor systems as described herein and as shown on the drawings.

B. Rock anchors shall consist of continuous upset threaded steel bars, provided with a factory-applied double corrosion protection and PVC bond breaker, installed in oversized drilled holes in rock, fully encapsulated with cement grout. Rock anchors shall be post-tensioned to 140 kips, and shall included the associated hardware to facilitate post-tensioning, and connection to the structure.

1.4 References

A. The International Building Code, latest edition.

B. American Society for Testing and Materials (ASTM).

C. American Institution of Steel Construction (AISC).

D. American Concrete Institute (ACI).

E. Post-Tensioning Institute (PTI) "Recommendations for Prestressed Rock and Soil Anchors," Post-Tensioning Manual, Fourth Addition.

1.5 Site and Subsurface Conditions

equipment setup(s) proposed shall be completely independent of the jack, shall included a micrometer dial gauge capable of measuring anchor bar elongation to the nearest 0.001 inch, having two inches of travel, and be mounted on an adjustable tripod or other device with flexible extension arms, or a "gooseneck" to permit rapid alignment of the dial gauge axis with the axis of the rock anchor.

1.7 Quality Assurance

A. Full time monitoring of the Work of this section will be provided by the Owner's Geotechnical Representative. No work shall be completed except in the presence of an authorized representative of the Owner's Representative.

B. Rock anchors, and their installation and testing, shall meet or exceed the minimum requirements specified herein and those recommended by the manufacturer.

C. Comply with all rules, regulations, laws and ordinances of the State of Maine, City of Portland, and all other authorities having jurisdiction. All labor, materials, equipment and services necessary to make work comply with such requirements shall be provided without additional cost to Owner.

D. The Foundation Contractor and anchor supplier shall furnish evidence that they have been engaged in successful installation, supply and testing (respectively) of anchors for a least five years.

E. Rock anchors shall be handled, transported, stacked and protected to prevent damage. The Contractor shall deliver rock anchors at times and in sequence to assure continuity of rock anchor installation.

1.8 Bidding Requirements

A. The base bid of the Contractor shall include the total price for the installation of the estimated quantity of rock anchors indicated on the drawings. This price shall include furnishing of all bars, bearing plates, nuts, washers, drilling hole, cleaning, grouting and redrilling as necessary, installing, tremie grouting, testing and post-tensioning, and all work incidental thereto.

B. Rock anchors rejected in accordance with the provisions of these specifications will not be paid for. The Contractor will be paid at the contract price for one replacement rock anchor installed and accepted according to the previsions of these specifications. If more than one replacement rock anchor is required to compensate for a rejected rock anchor, the Contractor will be paid at the contract price for only one anchor. Additional rock anchors required to compensate for rock anchors installed out of design location shall be installed at no additional cost to the Owner.

C. No separate payment will be made for grouting and redrilling holes.

PART 2. PRODUCTS

2.1 Rock Anchors

D. A plastic cap and plastic nut filled with mastic corrosion inhibitor (grease) will encapsulate the hexagonal nut for corrosive protection.

E. Grease for the coupling and stressing head assembly shall be mastic coating repairs due to damage, bar cutting and installation of end hardware.

PART 3. EXECUTION

3.1 Installation of Rock Anchors

A. Complete foundation excavation to the required footing subgrades indicated on the Drawings and pile installation and construction of pile caps.

B. During construction of formwork and installation of steel reinforcing for the footings, place a suitably-sized Schedule 80 PVC sleeve at anchor locations. PVC sleeves shall extend through the entire footing depth and any flowable fill use to level the bedrock surface, and be plugged during concreting to avoid fouling of the PVC sleeves with concrete.

C. Drilling of Holes:

1. Drill 5-in. diameter holes through the PVC sleeve, a sufficient distance into bedrock to provide the capacities required, but not less than the minimum distance required, as shown on the Drawings. Use percussion drilling methods.
2. Overdrill the hole at least 6 in. deeper than the depth required but not more than 12 in.
3. After drilling, clean each hole of all drill cuttings, sludge and debris prior to grouting.

D. Insert and center the rock anchor in the drill hole. Install the coupling and corrosion protection in accordance with manufacturer's instructions. As a minimum, the coupling shall be centered on the two bars, locked in place by set screws, the annular space filled with grease and protected by heat shrink plastic sheathing.

E. Cement Grouting:

1. Cement grout shall be installed in one phase.
2. Grout the annular space between rock anchor and the drill hole with cement grout using the tremie method to expel all water and loose debris from the drill hole. The bottom of the tremie pipe shall not be raise above the top of the grout in the drill hole during tremie grouting. Grout the entire bar length to the top of the hole. Regrout as necessary if grout settles. The rock anchor will be considered grouted when there is full return of undiluted grout from the top of the hole. If grout loss from the drill hole exceeds three times the volume of the annular space between the drill hole and the rock anchor, grouting will be discontinued, the rock anchor removed from the hole, and the drill fully grouted. Redrill the hole after at least one day.

F. Tensioning of rock anchors:

SECTION 02420

SITE UTILITIES

1 PART 1. GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Site Earthwork - Section 02200

C. Site Drainage - Section 02400

D. Construction Drawings

1.2 TESTS, PERMITS, INSPECTIONS, AND CODES

A. Sewer and water lines shall be tested before use. Coordination required with public utilities.

B. Utility installations shall comply with all applicable local and state codes and with requirements of Portland Water District and City of Portland Sewer Division.

C. All utility installations shall be inspected and approved by the project Landscape Architect or Owner's authorized representative before being backfilled and also by utility company inspectors and local code enforcement as applicable.

D. The Contractor shall obtain and pay for any permits required for this portion of the work.

1.3 SUBMITTALS

A. Refer to Section 02400, Paragraph 1.3.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, meter pit and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents: Record actual locations of piping mains, valves, connections; thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

E. All materials including pipe, valves, hydrants, etc., shall be subject to approval by the Portland Water District. Refer to attached standards.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with the City of Portland technical Design Standards and Guidelines and the Portland Water District requirements. The Contractor shall comply with the requirements contained within this section and those contained within the

A. Concrete for Thrust Restraints: Concrete type specified in Section 03300.

3 PART 3. EXECUTION

3.1 TRENCHES

A. Pipe trench excavation and backfill shall be as specified in Section 02200 - Site Earthwork.

3.2 PIPE JOINTING AND PIPE LAYING: SANITARY SEWER

A. Pipe Jointing - All joints shall be made in a dry trench and in accordance with the manufacturer's recommendations and the best practices for class of pipe laid. The ends of the pipe shall be wiped clean before making the joint.

B. Pipe Laying - The pipe shall be accurately laid to the line and grades to the satisfaction of the Landscape Architect or the Owner's authorized representative. Sewer pipe shall be placed on six (6) inches of specified crushed material. The line and grade may be adjusted by the project Landscape Architect or the Owner's authorized representative and the City Engineering Department representative from that shown on the Drawings to meet field conditions and no extra compensation shall be claimed therefore. Whenever the nature of the material excavated is such as to render it unsuitable for bedding, the Contractor shall furnish suitable material as otherwise provided in these Specifications.

C. The interior of each length of pipe shall be swabbed and wiped clean before laying the next length. No length of pipe shall be laid until the previous length has had specified material placed and tamped around it to secure it firmly in place to prevent any disturbance. Bell ends shall be laid uphill. Whenever the work is stopped temporarily for any reason whatever, the end of the pipe shall be carefully protected against dirt, water or other extraneous material.

D. The pipe shall be cut as necessary. Sufficient short lengths of pipe shall be furnished so that pipe shall not be more than four (4) feet in length at points of connection with other piping.

E. Inspection - Pipe installation shall be subject to inspection by the Landscape Architect or Owner's authorized representative for quality, adherence to line and grade, jointing and proper backfill. Any joint not satisfactory to the Inspector shall be removed and remade to his satisfaction at the Contractor's expense. No pipe shall be backfilled until it has been approved. All work must conform to the City of Portland standards for the sanitary installation.

F. Safety regulation of the State of Maine and the Federal Government, as applicable, shall be followed in regards to work in trenches and trench excavations.

3.3 MANHOLE CONNECTION

A. Neatly cut off main flush with inside of existing manhole where they enter structure walls, and point up irregularities and rough edges with nonshrinking grout. Shape inverts for smooth flow across structure floor as shown on Drawings. Use concrete and mortar to obtain proper grade and contour and finish surface with fine textured wood float.

3.9 INSPECTION

A. The manufacturer shall certify to the Owner that all pipe and fittings furnished under this contract conform to these Specifications.

B. Acceptability of pipe shall be determined by results of strength tests and by inspection at point of delivery to determine whether pipe conforms to Specifications in design and freedom from defects. Rejection on results of field inspection may be made on account of any of the following:

(1) Variations in any dimensions exceeding permissible variations.

(2) Visible cracks, holes, foreign inclusions or other injurious defects.

(3) Any pipe or fittings showing a crack and any fitting or pipe which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from work.

(4) Variation of more than 1/16 inch per linear foot in alignment of pipe intended to be straight.

(5) Insecure attachment of spurs or branches.

3.10 BACKFILLING

A. Backfilling shall be done with approved materials free from roots, frozen pieces, rubbish, large clods or stones. Backfill materials shall be placed in trenches evenly and carefully around and over the pipe in layers. Each layer shall be thoroughly and properly compacted.

3.11 TESTING

A. Whenever practical, before the trench has been backfilled or the joints covered, the pipe shall be tested for leaks. The test may also be made with one foot of backfill placed on the pipe, or the pipe may be completely backfilled. All leaks above the allowable maximum shall be repaired, however regardless of when tests are made. The Contractor shall provide all necessary equipment including but not limited to an appropriate pump, water container, pressure gauge, valve, hydrant connection and corporation stop connection, and he shall perform all work required in connection with the test.

B. Each section tested shall be slowly filled with water, care being taken to expel all air from the mains and service lines, if installed. If necessary, the pipes shall be tapped at high points to vent the air. All foreign material shall then be flushed from the main. If possible, a flushing velocity of fps shall be run through the mains until clean.

C. The portion to be tested shall be placed under constant 150 percent of working pressure or 100 psi whichever is greater as designated by the project engineer, all leaks shall be repaired, additional tests instituted and continue the process until all major leakages are eliminated. The test pressure shall be at the minimum pressure at highest point in the water line. Further, line test pressure shall not exceed 15% of the pressure rating at the lowest point.

3.16 CLEAN-UP

A. Upon completion of the installation of the sanitary sewers, appurtenant structures, water distribution system and any other work incidental thereto, the Contractor shall remove from the project all equipment, surplus construction materials and debris of any type resulting from the work and shall leave the area in as good or better condition as prior to construction.

END OF SECTION

SECTION 02470

BITUMINOUS CONCRETE PAVING

PART 1. GENERAL

1.1. Related Work Specified Elsewhere

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Site Earthwork - Section 02200.

C. Construction Drawings.

1.2 References

A. State of Maine Department of Transportation Standard Specifications Highways and Bridges, latest revision, hereafter designated as MDOT Specifications.

1.3 Material Certificates

A. Submit materials certificate to onsite independent testing laboratory, which is signed by material producer and Contractor, certifying that materials comply with, or exceed, the requirements herein.

PART 2. PRODUCTS

2.1 Materials

A. Bituminous Concrete (roadway and parking) - An approved hot plant mix conforming to MDOT Standard Specifications (latest revision). Use Grading B mix for binder and C mix for surface.

PART 3. EXECUTION

3.1 Bituminous Concrete Paving

A. The Contractor shall be responsible that gravel is in proper condition to pave before starting work.

B. Proof roll prepared base material surface to check for areas requiring additional compaction and areas requiring removal and recompaction.

C. Do not begin paving work until deficient base material areas have been corrected and are ready to receive paving.

D. Pavement mix for roads and parking areas shall be as herein specified and shall consist of the following courses after compaction:

H. Do not permit maneuvering of excavating equipment, lifts or other vehicles with tight turning or tracking capabilities on finished surface. Damaged areas shall be restored by Contractor at no additional expense to Owner.

3.3 Field Quality Control

A. Grade Control: Establish and maintain required lines and elevations.

B. Thickness: In-place compacted thickness shall not be less than thickness specified on the Drawings. Areas of deficient paving thickness shall receive a tack coat and a minimum one (1) inch overlay; or shall be removed and replaced to the proper thickness, at the discretion of the Owner; until specified thickness of the course is met or exceeded at no additional expense to the Owner.

C. Surface Smoothness: Testing shall be performed on the finished surface of each asphalt concrete course for smoothness, using 10' - 0" straightedge applied parallel with, and at right angles to centerline of paved area.

The results of these tests shall be made available to the Owner upon request. Surfaces will not be acceptable if exceeding following tolerances for smoothness:

Base Course Surface:	1/4"
Wearing Course Surface:	3/16"

D. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable paving as directed by Owner.

E. Compaction: Field density tests for in-place materials shall be performed by examination of field cores in accordance with one of the following standards:

(1) Bulk specific gravity of paraffin-coated specimens: ASTM D-1188.
(2) Bulk specific gravity using saturated surface-dry specimens: ASTM D-2726.

F. Rate of testing shall be one (1) core per 20,000 square feet of pavement, with a minimum of three (3) cores from heavy-duty areas and three (3) cores from standard-duty areas. Cores shall be cut from areas representative of the project.

G. Areas of insufficient compaction shall be delineated, removed and replaced in compliance with the specifications at no expense to the Owner. Areas damaged by construction equipment shall be repaired to satisfaction of Owner at no expense to Owner.

END OF SECTION

SECTION 02772

GRANITE CURBING

PART 1. GENERAL

1.1 Related Work Specified Elsewhere

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Common Excavation, Embankment and Compaction – Section 02315.

C. Construction Drawings

1.2 References

A. Where M.D.O.T. appears it shall be taken to mean The State of Maine Department of Transportation Specifications, Highways and Bridges - Latest Revision.

PART 2. PRODUCTS

2.1 Materials

A. Vertical and Sloped Granite Curb: Granite curb shall conform to M.D.O.T. specifications for TYPE I and TYPE V. Curb shall be acceptable granite from approved quarries.

B. Tip-Down and Transition Granite Curb: Miscellaneous Granite Curb Sections shall conform to M.D.O.T. Specification 712.04 (b).

C. All granite curb shall conform to the following standards.

(1) All granite curb shall be basically light gray in color, free from seams and other structural imperfection or flaws which would impair its structural integrity, and of a smooth splitting appearance. Natural color variation characteristic of the deposit from which the curbing is obtained will be permitted.

(2) The exposed face shall be smooth quarry split to an approximately true plane having no projections or depressions which will cause over one (1) inch to show between a two (2) foot straight-edge and the face when the straight-edge is placed as closely as possible on any part of the face.

(3) If projections on the face are more than that specified they shall be dressed off. The top and bottom lines of the face shall be pitched off to a straight line and shall not show over one (1) inch between stone and straight-edge when straight-edge is placed along the entire length of the top and bottom lines and when viewed from a direction at right angles to the plane of the face, and for the top line only not over (1) inch when viewed from a direction in the plane of the face. The ends shall be square to the length at the face and so cut that when placed end to end as closely as possible, no space shall show in the joint at the face of over 3/8 inch, except that where the edging is to be used on a curve having a radius of ten (10) feet or less, the ends of the stones shall be so cut as to provide a finished joint at the face section of not more than 1/2 inch. The arras formed by the intersection of the plane of the face with the plane of the end joint shall not

SECTION 02780

PAVERS - CONCRETE, BRICK AND GRANITE

1 PART 1. GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Site Earthwork - Section 02200.

C. Bituminous Concrete Paving – Section 02470

D. Construction Drawings.

2 PART 2. PRODUCTS

2.1 MATERIALS

A. Concrete Pavers - Paving stone for handicap curb ramp, seating plaza and paver walkway shall be 4" x 8" nominal, paving stone. All 4" x 8" pavers shall be 2-3/8" thick, with average minimum compressive strength of 8,000 psi with no individual unit under 7,200 psi, and absorption rate of 5 percent, with no unit greater than 7 percent (ASTM C 140) when tested in accordance with ASTM 936-82. Paver for the handicap ramps shall be **Holland Stone with a Score, color "Granite Gray"**, pavers for seating plaza and seating area shall be **Holland Stone, (colors to be determined).** All pavers as manufactured or distributed by Duracon Paving Systems, Genest Concrete - Wilson Street, P.O. Box 151, Sanford, Maine 04073 or approved equal.

B. Concrete Paver and Joint Sealant – Surebond SB-1370 joint stabilizing sealer as manufactured by Surebond East, Inc.

C. Brick pavers for brick sidewalks shall be of standard size; two and one-forth inches (2-1/4") by three and five eighths inches (3-5/8") by eight inches (8"), extruded, solid, flashed-face without frogging, conforming to ASTM C-216 Grade SW, Union Square/Blush Red Velour as manufactured by Lachance Brick Co., Auburn, Maine.

1. The absorption limits shall be from 5 to 12 percent for the average of 5 bricks.

2. The compressive strength shall not be less than 6,000 PSI.

3. The modulus rupture shall not be less than 1,000 PSI

D. Granite pavers for main building entries shall be 2" thick, unit size vaires (see plan). Granite shall be gray with thermal finish, sawn edge and sawn bottom. Granite shall be uniform in grain and color.

SECTION 02945

LANDSCAPING

PART 1. GENERAL

1.1 Related Work Specified Elsewhere

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

A. Site Improvements - Section 02870

C. Construction Drawings

1.2 Scope

A. Work under this Section shall include all labor, materials, services, equipment and accessories necessary to furnish and install trees, shrubs, and turf in accordance with the specifications and applicable Drawings.

1.3 Certification of Acceptability

A. Inspection of the work covered by this Section to determine completion of the work involved will be made at the conclusion of the Maintenance Period upon written notice requesting such inspection submitted by the Landscape Contractor at least ten (10) days prior to the anticipated date. The condition of turf and plantings will be noted and determination made by the Landscape Architect whether maintenance shall continue.

1.4 Standards

A. Provide plants which are true to name. Tag one of each bundle or Lot with the name and size of plants and shall conform to ANSI Z260.1 - Nursery Stock, latest edition, of the American Association of Nurserymen, Inc.

B. Workmanship: Perform work in accordance with the best standards of practice for Landscape work and under the continual supervision of a competent foreman capable of interpreting the Drawings and Specifications.

C. Submit documentation to Landscape Architect of Record within twenty-five (25) days after award of contract stating that plant material is available. Any and all substitutions due to unavailability must be requested in writing prior to confirmation of ordering.

D. Plants shall be subject to review and approval of Landscape Architect of Record at place of growth or upon delivery for conformity to specifications. Such approval shall not impair the right of review and rejections during progress of the work. Submit written request for review of plant material at place of growth to Landscape Architect of Record. Written request shall state the place of growth and quantity of plants to be reviewed. Landscape Architect of Record reserves the right to refuse review at this time if, in his judgement, sufficient quantity of plants is not available for review. Review shall be for character and form.

(4) Lime - Commercial ground lime with no less than 85% total carbonates, 50% passing a 100 mesh sieve and 90% passing a 200 mesh sieve as approved by the Landscape Architect. Coarser material will be accepted provided that specific rates of application increased proportionately.

(5) Compost soil amendment – Acceptable compost for "compost manufactured topsoil" shall conform to EPA Chapter 40 CFR 503 (pathogen, metals and vector attraction reduction) as well as applicable state regulations.

C. Commercial Fertilizer

(1) Seeding - 19-26-5 dust free homogenous granular material such as Scotts Pro-Turf Starter Fertilizer or an approved equal (application rate as recommended by manufacturer).

(2) Sodding - 10-6-4 with 50% nitrogen derived from ureaform, such as Agway Turfwood Special Premium or an approved equal (application rate as recommended by manufacturer).

(3) Superphosphate - 0-20-0 in unopened bags with manufacturer analysis printed on the bag.

D. Plant Materials - Furnish plants shown and specified on the Drawings and listed in the plant materials list. Discrepancies between the number of plants shown on the Drawings and the number listed in the plant list shall not be grounds for additional remuneration for the Contractor. Plants shall be nursery grown, typical of their species or variety and have a normal habit of growth. Any plant with broken, damaged, or badly bruised branches, trunks, or root balls shall be rejected.

(1) Sizes: Plants larger than specified in the plant list may be used if approved by the Landscape Architect but use of such plants shall not increase the contract price. If the use of the larger plants is approved, the spread of roots or ball of earth shall be increased in proportion to the size of the plants.

(2) Substitutions: In the event that trees, shrubs or other plant material specified in the plant list are impossible or unreasonably difficult to obtain, the Contractor shall immediately notify the Landscape Architect to discuss appropriate substitutions. No substitutions of plant material may be made without the approval of the Landscape Architect.

E. Grass Seed

(1) Grass Seed mixtures shall be fresh, clean, new crop seed. Seed may be mixed by an approved method on the site, or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers which shall bear the dealer's guaranteed statement of the composition of the mixture and the percentage of purity of each variety. The Dealer's Guarantee Statement shall be delivered to the Landscape Architect.

(2) Grass seed mixture shall be of the following types of seed:

- Lawn Areas:

  Park Mix by Allen, Sterling & Lothrop or approved equal

C. Watering (as required) of plant material shall continue for the duration of the maintenance period until certification of acceptability.

3.6 Loaming and Seeding

A. Conduct planting operations under favorable weather conditions. Areas not required to be developed otherwise shall be seeded to turf.

B. Compost Manufactured Topsoil – The soil (source material) shall be free of lumps, plants, weeds, roots and other debris over 2 inches in any dimension and free of stones over inch in any dimension. The organic compost shall be uniformly incorporated into the loam source by rolling and tumbling, by a front-end loader or by processing in a mixing plant. The material shall be mixed sufficiently to produce a homogenous soil, free of lumps and clods. In addition to the requirements for the compost amendment, the Contractor shall provide documentation that the recommended rate of fertilizer, per the testing analysis, has been applied to lawn areas prior to seeding.

C. Prior to placing loam, scarify subgrade areas; remove all rocks over two (2) inches and debris; and set grade stakes as necessary. Place topsoil evenly over all areas to be loamed to a minimum thickness of six (6) inches. Hand rake to remove clods, lumps, brush, roots, and stones over ¾ inch in diameter. Hand roll to show depressions and uneven grades. Regrade as necessary to obtain smooth, even grades. Surplus topsoil shall become the property of the Contractor and shall be removed off the site.

D. Apply additives (lime, fertilizer, compost etc.) as per the recommendation of the testing lab. Apply additives and harrow into top two (2) inches of the seedbed.

E. Sow seed specified by use of a mechanical spreader at the rates specified. Rake lightly in; roll with 200 lb. roller and water with a fine spray.

F. Following compaction, apply a one- (1) inch layer of straw to hasten germination.

G. Full even growth in all areas must be guaranteed. The maintenance period shall continue after seeding and until the lawns are certified acceptable by the Landscape Architect.

H. Repair damage resulting from erosion, gullies, washouts or other similar causes if such damage occurs before certification of acceptability of turf and planting by the Landscape Architect.

I. Sod - After all grading has been completed, the soil shall be irrigated within 12-24 hours before laying the sod. Sod shall not be laid on soil that is dry and powdery.

J. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote a uniform growth and strength. Care shall be exercised to insure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which cause air drying of the roots.

K. The Contractor shall water sod immediately after installation to prevent drying during progress of the work. It shall then be thoroughly irrigated to a depth sufficient that the underside of the new sod pad and soil immediately below the sod is thoroughly wet.

(5) Damage: Damage resulting from erosion, gullies, washouts, or other causes shall be repaired by filling with topsoil, tamping, re-fertilizing, and sodding by the Contractor at his own expense if such damage occurs prior to certification of acceptability of turf and plantings by the Landscape Architect.

(6) Responsibility: The Contractor's responsibility for maintenance shall cease at the time of certification of acceptability by the Landscape Architect. During the guarantee period, the Contractor shall be held responsible for making replacements, but no maintenance shall be required, other than spraying and dusting.

3.7 Replacement

A. At the end of the guarantee period, inspection will be made by the Landscape Architect upon written notice requesting such inspection submitted by the Contractor at least ten (10) days before the anticipated date. Any plant required under this Contract that is dead or not in satisfactory condition, as determined by the Landscape Architect, shall be removed from the site. These, and any other plants missing due to the negligence of the Contractor, shall be replaced with plants of the same type and size as originally specified. Replanting shall be done as soon as conditions permit, but during the normal planting season. Plant items in accordance with these specifications.

3.8 Clean-up

A. The Landscape Contractor shall remove all debris, construction equipment, excess fill, rocks, and other excess material caused by his work, from the site upon completion of his portion of the work.

END OF SECTION

Part II
Division 3
Concrete

SECTION 03300

CAST -IN-PLACE CONCRETE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Work included: Provide labor, materials, and equipment necessary to complete the work of this Section and, without limiting the generality thereof, furnish and include the following:

1. The extent of cast-in-place concrete work is shown on drawings and includes (but not by way of limitation) formwork, reinforcing, cast-in-place concrete, accessories, finishing, and casting in of items specified under other Sections of the Specifications or furnished by Owner that are required to be built-in with the concrete.

2. Equipment support pads indicated on mechanical drawings to be installed by the Building Contractor.

3. Cast-in-place retaining walls, exterior slabs on grade and other concrete shown on site drawings.

1.03 RELATED WORK:

A. Metal Fabrications: Section 05500

1. Expansion Anchors - Section 05120

2. Embedded Items - Section 05500

B. Anchor Bolts: Section 05120

C. Joint Sealants: Section 07900

D. Underslab Vapor Retarders/Wall Waterproofing: Division 7

1.04 QUALITY ASSURANCE:

E. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Division 1 have been complied with.

F. Engineer will review submittals a maximum of two review cycles as part of their normal services. If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate Engineer for additional review cycles.

G. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. Reinforcement certified mill reports covering chemical and physical properties and yield strength.

2. Patching products.

3. Non-shrink grout.

4. Curing compounds, where applicable.

5. Admixtures.

6. Expansion/Adhesive Anchors.

H. Shop Drawings:

1. Shop Drawing Preparation: Electronic files of structural drawings will not be provided to the contractor for preparation of shop drawings. Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI 315, showing bar schedules, stirrup and tie spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required at openings through concrete elements. Include supplemental reinforcing and bar supports necessary to support reinforcing steel at proper location within forms or slabs.

a. Review of the shop drawings will be made for the size and arrangement of reinforcement. Conformance of the Shop Drawings to the Contract Drawings remains the responsibility of the General Contractor. Engineer's review in no way relieves the General Contractor of this responsibility. Submit one print and one reproducible. Print will be reviewed and a reproducible will be returned to Contractor for printing and distribution. Multiple copies will not be marked by Engineer.

b. Shop drawings will not be reviewed as partial submittals. A complete submittal shall be provided all items listed prior. **Incomplete submittals will not be reviewed.**

I. Mix designs: Submit all laboratory test reports and materials for each mix design listed within. Prepare mixes by the field experience method and/or trial mixtures per the requirements of chapter 5 of ACI 318. Include the calculation of average strength and standard deviation. Proportioning by water cement ratio method will not be permitted.

2.03 CONCRETE MATERIALS:

A. Portland Cement: ASTM C 150, Type I or Type II, unless otherwise approved Use one brand of cement throughout project, unless otherwise acceptable to Architect.

B. Normal Weight Aggregates: ASTM C 33. Provide from a single source for exposed concrete. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite, or ochre which can cause stains on exposed concrete surfaces.

C. Light Weight Aggregates: ASTM C 330.

D. Water: Potable.

E. Air-Entraining Admixture: ASTM C 260.

F. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G containing not more than 1% chloride ions.

1. Fiber reinforcing shall be added and distributed prior to incorporation of Super Plasticizer.

G. Normal range water reducing admixture: ASTM C 494 Type A containing no calcium chloride.

H. Accelerating Admixture: ASTM C 494, Type C or E.

I. Blast Furnace Slag: ASTM C989

J. Fly Ash: ASTM C618, Class C or F

K. Calcium Chloride is not permitted.

2.04 RELATED MATERIALS:

A. Underslab Vapor Retarder: Provide vapor retarder over prepared sub base. Refer to architectural drawings, geotechnical report and/or division 7 specifications for additional requirements and vapor retarder location.

B. Non-Shrink Cement-based Grout: Provide grout consisting of pre-measured, prepackaged materials supplied by the manufacturer requiring only the addition of water. Manufacturer's instructions must be printed on the outside of each bag.

1. Non-shrink: No shrinkage (0.0%) and a maximum 4.0% expansion when tested in accordance with ASTM C-827. No shrinkage (0.0%) and a maximum of 0.2% expansion in the hardened state when tested in accordance with CRD-C-621.

2. Compressive strength: A minimum 28 day compressive strength of 5000 psi when tested in accordance with ASTM C-109.

3. Setting time: A minimum initial set time of 60 minutes when tested in accordance with ASTM C-191.

4. Composition: Shall not contain metallic particles or expansive cement.

2.05 PROPORTIONING AND DESIGN OF MIXES:

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 318. Use material, including all admixtures, proposed for use on the project. If trial batch method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Architect.

B. Submit written reports to Architect of each proposed mix for each class of concrete. Do not begin concrete production until mixes have been reviewed by Architect.

C. Proportion design mixes to provide concrete with the following properties:

1. Grade Beams, foundation piers (pilasters) and foundation walls (U.N.O.):

    a. Strength: 4,000 psi at 28 days.

    b. Aggregate: 3/4"

    c. W/C Ratio: 0.50 maximum

    d. Entrained Air: 6% +/- 1.5%

    e. Slump: 4" maximum

2. Foundation piers (pilasters) and foundation walls specified to be 5,000psi:

    a. Strength: 5,000 psi at 28 days.

    b. Aggregate: 3/4"

    c. W/C Ratio: 0.40 maximum

    d. Entrained Air: 6%+/- 1.5%

    e. Slump: 5" maximum

3. Drilled Pier concrete fill:

    a. Strength: 4,000 psi at 28 days.

    b. Aggregate: 3/4"

    c. W/C Ratio: 0.50 maximum

    d. Entrained Air: 6% +/- 1.5%

    e. Slump: 4" maximum

4. Interior Slabs-on-grade (excludes garage):

9. Additional slump may be achieved by the addition of a mid-range or high-range water reducing admixture. Maximum slump after the addition of admixture shall be 6 or 8 inches for mid-range or high range water reducing admixtures, respectively.

D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor, when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Structural Engineer before using in work.

1. Water may be added at the project only if the maximum specified slump and design mix maximum water/cement ratio is not exceeded.

2. Additional dosages of superplastisizer should be used when delays occur and required slump has not been maintained. A maximum of two additional dosages will be permitted per ACI 212.3R recommendations.

2.06 CONCRETE MIXING:

A. Job-Site Mixing will not be permitted.

B. Ready-Mix Concrete: Must comply with the requirements of ASTM C 94, and as herein specified. Provide batch ticket for each batch discharged and used in work, indicating project name, mix type, mix time and quantity.

1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required by Structural Engineer.

2. When the air temperature is between 85 degrees F. and 90 degrees F., reduce the mixing and delivery time from 1 1/2 hours to 75 minutes, and when the air temperature is above 90 degrees F., reduce the mixing and delivery time to 60 minutes.

PART 3EXECUTION

3.01 FORMS:

A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Design, construct, erect, maintain, and remove forms for cast-in-place concrete work in compliance with ACI 347.

C. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.

3. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.

4. Place reinforcement to obtain specified coverage for concrete protection within tolerances of ACI-318. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

5. Install welded wire fabric in flat sheets in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

3.03 JOINTS:

A. Construction Joints: Locate and install construction joints, which are not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to Architect. Submit plan indicating proposed location of construction joints for review prior to beginning work.

1. Provide keyways at least 1-1/2" deep in construction joints in walls, and slabs; bulkheads reviewed by the Engineer, designed for this purpose may be used for slabs.

2. Roughened surfaces shall be used between walls and footings unless shown otherwise on the drawings. The footing surface shall be roughened to at least an amplitude of 1/4" for the width of the wall before placing the wall concrete.

3. Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints.

4. Joints in slabs on grade shall be located and detailed as indicated on the drawings. If saw-cut joints are required, the early-entry dry-cut process shall be used. Refer to ACI 302, section 8.3.12.

3.04 INSTALLATION OF EMBEDDED ITEMS:

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto. Notify other trades to permit installation of their work. Templates to be utilized for setting of anchorage devices shall be constructed in a manner to allow mechanical consolidation of concrete. "Wet Setting" of embedded items into plastic concrete will not be permitted without special permission from the Engineer.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface.

3.05 INSTALLATION OF GROUT

A. Place grout for base plates in accordance with manufacturer's recommendations.

a. Belt conveyors shall be horizontal or at a slope which will not cause excessive segregation or loss of ingredients. Concrete shall be protected against undue drying or rise in temperature. An arrangement shall be used at the discharge end to prevent apparent segregation. Mortar shall not be allowed to adhere to the return length of the belt. Long runs shall be discharged into a hopper or through a baffle.

b. Chutes shall be metal or metal-lined and shall have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20 feet long, and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

c. Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled so that segregation is not apparent in the discharged concrete.

d. Concrete shall not be conveyed through pipe made of aluminum alloy. Standby equipment shall be provided on the site.

e. Tined rakes are prohibited as a means of conveying fiber reinforced concrete.

4. Do not use reinforcement as bases for runways for concrete conveying equipment or other construction loads.

D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 18 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

1. Consolidate placed concrete by mechanical vibrating equipment. Hand-spading, rodding or tamping as the sole means for the consolidation of concrete will only be permitted with special permission from the Engineer. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

2. Use vibrators designed to operate with vibratory equipment submerged in concrete, maintaining a speed of not less than 8000 impulses per minute and of sufficient amplitude to consolidate the concrete effectively. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine, generally at points 18 inches maximum apart. Place vibrators to rapidly penetrate placed layer and at least 6 inches into the preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion maintain the duration of vibration for the time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix, generally from 5 to 15 seconds. A spare vibrator shall be kept on the job site during all concrete placing operation.

E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

3. Wet forms thoroughly before placing concrete.

4. Do not use retarding admixtures without the written acceptance by the Architect.

3.08 FINISH OF FORMED SURFACES:

A. Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This concrete surface shall have texture imparted by form facing material, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 in. in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, damp-proofing, painting or other similar system. This as-cast concrete surface shall be obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

C. Grout Cleaned Finish: Provide grout cleaned finish to scheduled concrete surfaces which have received smooth form finish treatment. Combine one part Portland cement to 1-1/2 parts fine sand by volume and mix with water to consistency of thick paint. Proprietary additives may be used at Contractor's option. Blend standard Portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will closely match adjacent surfaces.

1. Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

D. Related Unformed Surfaces: At tops of walls and grade beams, horizontal offset surfaces occurring adjacent to formed surfaces, strike-off, smooth and finish with a texture matching adjacent uniformed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.09 FLOOR FLATNESS AND LEVELNESS

A. Floor flatness/levelness tolerances: Tolerances for various floor uses should conform to the requirements set forth in ACI 117 and ACI 302 for "flat" floor profile.

1. Minimum Test Area Flatness/Levelness: F_F30/F_L20

2. Minimum Local F Number: F_F15/F_L10

B. Contractor shall measure floor finish within 72 hours after slab finishing and provide corrective measures for finishes not within tolerance. Corrective procedures shall be reviewed by the Architect prior to implementation.

3.10 MONOLITHIC SLAB FINISHES:

A. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds, and as otherwise indicated.

B. Formwork supporting weight of concrete, such as joints, slabs and other structural elements, may not be removed in fewer than 14 days or until concrete has attained design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.

C. Form facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and support.

3.13 REUSE OF FORMS:

A. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and latency, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect.

3.14 MISCELLANEOUS CONCRETE ITEMS:

A. Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

3.15 CONCRETE SURFACE REPAIRS:

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to the Architect.

1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

2. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins, and other projections on surface and stains and other discolorations that cannot be removed by cleaning.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION:

5. Compressive Strength Tests: ASTM C39; one set for each 50 cu. yds. or fraction thereof, of each concrete class placed in any one day or for each 4,000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days, 1 specimen retained in reserve for later testing if required.

6. Pumped concrete shall be tested at point of discharge per ACI 301.

F. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods, as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

END OF SECTION

SECTION 03410

STRUCTURAL PRECAST CONCRETE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Extent of structural precast concrete work is shown on drawings and in schedules.

B. The extent of Structural Precast Concrete is shown on drawings and includes (but not by way of limitation) 8" prestressed concrete planks, all bearing materials, embedded items, accessories and grouting of plank joints.

1.03 RELATED WORK:

A. Section 03300 - Cast in Place Concrete

B. Section 05500 - Metal Fabrications

C. Section 05120 – Structural Steel, Anchor Bolts

D. Section 07900 - Joint Sealants

1.04 QUALITY ASSURANCE:

A. Codes and Standards: Comply with the provisions of the latest edition of the following except where more stringent requirements are shown or specified:

1. ACI 301 "Specifications for Structural Concrete for Buildings."

2. ACI 318 "Building Code Requirements for Reinforced Concrete."

3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

4. Precast/Prestressed Concrete Institute, "PCI Design Handbook, Precast and Prestressed Concrete."

other data to show compliance with specifications (including specified standards).

H. Shop Drawings: Submit shop drawings showing complete information for fabrication and installation of precast concrete units.

1. Indicate member dimensions and cross section

2. Indicate location, size and type of reinforcement, including special reinforcement and lifting devices necessary for handling and erection.

3. Indicate layout, dimensions, and identification of each precast unit corresponding to sequence and procedure of installation.

4. Indicate welded connections by AWS standard symbols.

5. Detail inserts, connections, and joints, including accessories and construction at openings in precast units.

6. Anchorage: Provide location and details of anchorage devices that are to be embedded in other construction. Furnish templates if required for placement.

7. Erection Sequencing: Include erection procedure for precast units and sequence of erection.

I. Performance Design: Design Calculations:

1. Provide complete design calculations prepared and stamped and signed by a registered professional engineer licensed in the State of Maine.

2. Calculations submitted without affixed stamp and signature will be rejected and returned without review.

3. Plank Design Criteria:

a. Design Loads: As indicated on the drawings

b. Code: Comply with ACI 318, Latest Edition

c. Maximum Superimposed Live Load Deflection:

1. Floors: Span/360

2. Roofs: Span/240

d. Planks are to be designed as non-composite

e. Camber: Indicate Camber in design calculations.

f. Structural Steel Plank Headers: Design where required or indicated.

C. Uncoated, 7 wire stress relieved strand complying with ASTM A 416. Use grade 250 unless Grade 270 is required by design and has been indicated on shop drawings.

D. Strand similar to the above, but having the size and ultimate strength of wires increased so that the ultimate strength of the strand is increased approximately 15%, or strand with increased strength but with fewer number of wires per strand, may be used at the manufacturer's option.

E. Steel Wire: ASTM A 82, plain, cold-drawn, steel.

F. Welded Wire Fabric: ASTM A 185.

G. Deformed Welded Wire Fabric: ASTM A 497.

H. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing, complying with CRSI recommendations.

2.03 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type III: Use only one brand and type of cement throughout project, unless otherwise acceptable to Architect.

B. Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete. Local aggregates not complying with ASTM C 33, but which have shown by special test or actual service to produce concrete of adequate strength and durability, may be used when acceptable to Engineer.

C. Water: Potable and free from foreign materials in amounts harmful to concrete and embedded steel.

D. Air-Entraining Admixture: Not Required

E. Water-Reducing Admixture: ASTM C 494, Type A. Types B, C, D or E may be used, subject to the Architect's approval.

F. Cement Grout: Portland cement, ASTM C 150, Type 1, and clean, natural sand, ASTM C 404. Maximum ratio of 3.0 parts sand to 1.0 part cement, by volume.

2.04 RELATED MATERIALS

A. Steel Shapes: ASTM A 36.

B. Bearing Pads: Provide bearing pads for precast hollow slab units in accordance with manufacturer's recommendations and as indicated.

1. Frictionless Pads: Terrafluorethylene (TFE), with glass fiber reinforcing as required for service load bearing stress.

2. Tempered Hardboard Pads: PS 58, smooth both sides.

or placing of concrete. Do not relocate bearing plates in units unless acceptable to Architect.

D. Holes: Cast holes for openings larger than 10" diameter or 10" square in accordance with final shop drawings. Smaller holes will be field cut by trades requiring them, as acceptable to Architect.

E. Form Coating: Coat surfaces of forms with bond breaking compound before reinforcement is placed. Provide commercial formulation form-coating compounds that will not bound with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces requiring bond or adhesion. Apply in compliance with manufacturer's instructions.

F. Surface Preparation: Clean reinforcement of loose rust and mill scale, earth and other materials which reduce or destroy bond with concrete.

G. Reinforcement:

1. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations.

2. Locate and support reinforcing the metal chairs, runners, bolsters, spacers and hangers, as required.

3. Place reinforcement to obtain the specified coverages for concrete protection.

4. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations.

5. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

H. Tendon Pretensioning: Pretensioning of tendons for prestressed concrete may be accomplished either by single strand tensioning method or multiple-strand tensioning method. Comply with PCI MNL-116 requirements.

I. Concrete Placement: Place concrete in a continuous operation to prevent formation of seams or planes of weakness in precast units, complying with requirements of ACI 304. Thoroughly consolidate placed concrete by internal and external vibration without dislocation or damage to reinforcement and built-in items.

J. Identification: Provide permanent markings to identify pick-up points and orientation in structure, complying with markings indicated on final shop drawings. Imprint date of casting on each precast unit on a surface which will not show in finished structure.

K. Concrete Curing: Curing by low-pressure steam, steam vapor, radiant heat and moisture, or other similar process may be employed to accelerate concrete hardening and to reduce curing time.

D. Powder-Actuated Fasteners: Powder-actuated fasteners are not permitted for surface attachment of accessory items in precast, prestressed unit, unless otherwise accepted by precast manufacturer.

E. Installation Tolerances: Install precast units without exceeding following tolerance limits:

1. Variations from Level or Elevation: 1/4" in any 20' run; 1/2" in any 40' run; total plus or minus 1/2" at any location.

2. Variation from Position in Plan: Plus or minus 1/2" maximum at any location.

3. Offsets in alignment of Adjacent Members at Any Joint: 1/16" in any 10' run; 1/4" maximum.

F. Shoring of Steel Construction: Contractor shall provide all shoring necessary to erect precast plank on steel supporting structure. Contractor shall employ the services of a Specialty Engineer Registered in the State of Maine to design such shoring. Shoring design shall account for all construction loads, unbalanced loading, torsional loading and temporary lateral effects on the steel frame and precast concrete elements. The design shall account for all loadings until such time that the construction is completed.

G. Grouting Connections and Joints: After precast concrete units have been placed and secured, grout open spaces at connection and joints as follows:

1. Provide forms or other acceptable method to retain grout in place until sufficiently hard to support itself. For Girder Slab construction, break out cores and dam per the manufacturer's recommendations.

2. Provide reinforcement in joint were indicated.

3. Pack spaces with stiff grout material consolidating until voids are completely filled.

4. Place grout to finish smooth, plumb, and level with adjacent concrete surfaces.

5. Keep grouted joints damp for not less than 7 days after initial set.

6. Promptly remove grout material from exposed surfaces before it hardens.

7. Grout shall attain the specified 28 day strength prior to application of topping and superimposed loads for the Girder Slab System.

3.02 PLANT QUALITY CONTROL EVALUATIONS DURING FABRICATION:

A. Fabricator Requirements:

1. Fabricator is responsible to provide testing to indicate compliance of plank materials and tensioning stresses with manufacturing requirements. Any

c. Test cores in an air-dry condition per ACI 318 if concrete will be dry during use of completed structure.

d. Strength of concrete for each series of cores will be considered satisfactory if their average compressive strength is at least 85% of 28-day design compressive strength.

e. Test results will be made in writing on same day that test is made, with copies to Architect, Contractor, and precast manufacturer. Include in test reports the project identification name and number, date, name of precast concrete manufacturer, name of concrete testing service, identification letter, name, and type of member or members represented by core tests, design compressive strength compression breaking strength and type of break (corrected for length-diameter ratio), direction of applied load to core with respect to horizontal plan of concrete as placed, and moisture condition of core at time of bearing.

10. Patching: Where core test results are satisfactory and precast units are acceptable for use in work, fill core holes solid with patching mortar, and finish to match adjacent concrete surfaces.

11. Defective Work: Precast concrete units which do not conform to specified requirements, including strength, tolerance, and finishes, shall be replaced with precast concrete units that meet requirements of this section. Contractor shall also be responsible for cost of corrections to other work affected by or resulting from corrections to precast concrete work.

3.03 FIELD QUALITY CONTROL TESTING DURING CONSTRUCTION:

A. Testing Agency/Project Special Inspector shall verify reinforcement, including joint and slab reinforcement (WWF or reinforcing bar). Agent shall verify WWF or reinforcement has been chair/placed with proper clearances.

B. The Owner shall employ a Testing Laboratory to inspect, sample and test the materials and the production of grout and to submit test reports. Testing shall be performed by technicians certified by the Maine Concrete Technician Certification Board and/or ACI Concrete Field Testing Technician Grade I.

C. Grout shall be sampled and tested for quality control during placement. Quality control testing shall include the following, unless otherwise directed by the Architect.

D. See Submittals section for report requirements.

E. Sample fresh Grout: ASTM C-172, except modified slump to comply with ASTM C-94

F. Slump: ASTM C-143: One test for each grout load at point of discharge and one test for each set of compressive strength specimens.

G. Air Content: ASTM C-173: volumetric method or ASTM C-231 pressure method, one for each set of compressive strength specimens.

SECTION 03450

ARCHITECTURAL PRECAST CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General Conditions, Supplementary Conditions and Division 1 - General Requirements apply to Work of this Section.

1.2 SUMMARY

A. Section Includes: Provide plant-precast architectural concrete Work shown and specified. (Specifier may wish to describe units) (Specifier may wish to delineate structural design services; miscellaneous materials, i.e. anchorage and connection devices; testing services; and similar items required of this supplier).

B. Substitutions: Submit in accordance with requirements of Section 01630.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO).

B. American Concrete Institute (ACI).

1. ACI 318 - "Building Code Requirements for Reinforced Concrete."

2. ACI 533 - "Guide for Precast Concrete Wall Panels."

C. Architectural Precast Association (APA).

D. American Society for Testing and Materials (ASTM).

1. A 36 - "Specification for Carbon Structural Steel."

2. A 47 - "Specification for Ferritic Malleable Iron Castings."

3. A 123 - "Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."

4. A 153 - "Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware."

5. A 185 - "Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement."

6. A 283 - "Specification for Low and Intermediate Tensile Strength Carbon Steel Plates."

7. A 307 - "Specification for Carbon Steel Bolts and Studs 60,000 PSI Tensile Strength."

8. A 325 - "Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength."

G. Concrete Reinforcing Steel Institute (CRSI).

1. "Manual of Standard Practice."

H. Department of Defense (DOD).

I. Precast/Prestressed Concrete Institute (PCI).

1. MNL 117 - "Manual for Quality Control."

2. MNL 120 - "Design Handbook."

J. Steel Structures Painting Council (SSPC).

1. "Painting Manual."

K. American Institute of Steel Construction (AISC)

1. "Manual of Steel Construction

1.4 SYSTEM DESCRIPTION

A. Performance Requirements: Comply with Uniform Building Code, (UBC), municipal building codes, regulations of other governing agencies having jurisdiction and as follows: (Some or all of the following performance requirements may apply, depending on the type and use of precast units and the nature of the structure.)

1. (Wind Loads)

2. (Seismic forces).

3. (Building dynamics {thermal, live, impact or concentrated loads, structural deflection, story drift}).

1.5 SUBMITTALS

A. Product Data: (May include color pigments, admixtures, steel primer and galvanized touch-up material).

B. Shop Drawings

1. Show in-place location, fabrication details, plans, elevations, anchorages, reinforcement, connection details and methods, dimensions, finishes, relationships to adjacent materials, and erection and placement.

2. Show identification marks, coordinated to Shop Drawings, and date of manufacture on all units to facilitate hauling and erection.

3. Setting diagrams, templates, instructions and directions as required for installation.

C. Engineering Calculations (If required): Engineering calculations sealed by an engineer licensed to practice in (project state)

2. Obtain Architect's approval of initial production units of each type listed.(List unit types requiring approval).

3. Supply initial production units for job site assembly with other materials, for approval, as noted in this Section and in Division 1.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver units to the Project site in such quantities and at such times to ensure continuity of installation.

B. Avoid job site storage. When job site storage is required store in a manner to prevent physical damage and so that markings are visible.

C. Lift and support only at designated lifting or supporting points as shown on reviewed Shop Drawings.

D. Provide anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions as required for installation.

1.8 PROJECT CONDITIONS PROJECT CONDITIONS

A. Field Dimensions: General Contractor to furnish field measurements, if required, to precast fabricator.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approved Fabricators:

1. Fabricators not listed as approved shall request approval, as specified in Section 01630.

2.2 MATERIALS

A. Concrete Materials:

1. Portland Cement: ASTM C 150, Type I or III, white or gray colors to achieve desired finish colors. Use only one brand, type, and color from the same mill. Gray cement maybe used for non-exposed backup mixes.

2. Aggregates: ASTM C 33, gradation may differ to achieve desired finish characteristics. Select coarse and fine aggregate colors and screen sizes to match approved sample(s). Verify that adequate supply, from one pitor quarry, for each type of aggregate is available for the entire Project. If possible obtain entire aggregate supply prior to starting Work, or have aggregate supply held in reserve by aggregate supplier.

3. (Lightweight aggregate: ASTM C 330).

9. (Stainless Steel Plate: ASTM F 593, Type 304 or Type 316; bolts and studs, nuts and washers).

10. Finish for Steel Connection Materials:

a. Hot-dip galvanize (ASTM A 123 or A 153) steel exposed to weather in final assembly.

b. Shop Prime Remaining Steel Shapes: SSPC-Paint 25.

c. Anchor Bolts, Nuts, Washers, Cadmium Plated: ASTM A 563, Grade C.

d. Hot-dip galvanize (ASTM A 153) setting bolts or projecting steel in masonry applications.

e. Galvanizing Repair Paint: DOD-P-21035A or SSPC-Paint 20.

f. Welding Electrodes: Comply with AWS Standards.

E. (Bearing Pads: Elastomeric pads, AASHTO M251; ASTM D 412).

F. Grout Materials:

1. Cement Grout: Cement ASTM C 150; sand ASTM C 404; proportions 1:2.5 by volume, minimum water for placement and hydration.

2. Non-Shrink Grout: ASTM C 1107.

3. Epoxy Grout: Consult suppliers.

2.3 MIXES

A. Design mixes for each type of concrete specified may be prepared by an independent testing agency or by b architectural precast manufacturing plant personnel at precast fabricator's option.

B. Proportion mixes by either testing agency trial batch or field test data methods in accordance with ACI 211.1, using materials to be used on the Project, to provide normal weight concrete with properties as follows:

1. Compressive Strength: 5,000 psi (or other strength requirement) when tested in accordance with ASTM C 39.

2. Maximum water cement ratio 0.40 at point of placement.

3. Add air-entrainment admixture to result in air content at point of placement complying with ACI 533 requirements.

4. List other admixtures and recommended quantities.

5. Water absorption maximum 6% (by weight) when tested in accordance with ASTM C 642.

6. (List ingredients of Architect's approved sample mix(es) when appropriate).

C. Follow procedures similar to paragraph 2.3.B for lightweight concrete mixes.

C. (Non-certified producers shall furnish and pay for reports by an independent Testing Laboratory, approved by the Owner as specified in paragraph 2.6.D).

D. (The Owner may retain an independent Testing Laboratory to evaluate fabricator's quality control and testing methods. Testing Laboratory shall be certified by CCRL or similar National authority. Fabricator shall allow Testing Laboratory access to all operations pertinent to the Project).

E. Defective Work: Discard units that do not conform to requirements as shown or specified. Replace with units which meet requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field Dimensions: Furnish field dimensions to fabricator as required.

B. Examine substrates and conditions for compliance with requirements for installation, tolerances, true and level bearing surfaces, and other conditions affecting performance of architectural precast concrete units. Do not proceed with installation until unsatisfactory conditions have been corrected.

C. Do not install units until supporting structure has been completed (has attained minimum allowable design compressive strength).

3.2 ERECTION

A. Erection shall be by persons experienced and trained in placement and securing of architectural precast concrete units.

B. Erect level, plumb, and true to line. Do not allow cumulative dimensional errors to develop. Adjustments such as shimming which would place additional stress on units will not be permitted. Adhere to dimensional tolerances in accordance with PCI recommendations. Erect and secure in a manner to prevent damage to units or units in place. Replace any damaged units.

C. Lift and handle precast using lift points and embeds as shown on precast shop drawings.

D. Erection Tolerances:

1. Erect within tolerances listed in ACI-533.

2. Erect to conform with structure tolerances listed in ACI-533.

3. Where two stage joint seal is required, sequence with sealant applicator to ensure that sealant, gaskets, and similar items required for interior side seal are installed concurrently with installation of precast units.

E. Joint Sealants: As specified in Section 07900.

3.3 REPAIR

SECTION 03540

GYPSUM CEMENTITIOUS UNDERLAYMENT

SPECIFICATION FOR GYP-CRETE 2000© FLOOR UNDERLAYMENT OVER ACOUSTI-MAT© II SOUND DEADENING PAD

PART 1 GENERAL

1.01 SUMMARY

A. Work of this section includes installation of gypsum cementitious underlayment over sound deadening pad. This specification for Gyp-Crete 2000 Floor Underlayment over Acousti-Mat II sound deadening pad is based on products of Maxxon Corporation, Hamel, MN. Products of other manufacturers may be considered, subject to compliance with requirements as judged solely by Architect.

1.02 SECTION INCLUDES

A. Gyp-Crete 2000 gypsum cement

B. Acousti-Mat II

C. Maxxon Floor Primer

D. Maxxon Overspray

1.03 QUALITY ASSURANCE

A. Gyp-Crete 2000 Installer's Qualifications: Installation of Gyp-Crete 2000 shall be by an applicator authorized by the Maxxon Corporation using Maxxon approved mixing and pumping equipment.

B. Acousti-Mat II Installer's Qualifications: Installation of Acousti-Mat II shall be by an applicator authorized by the Maxxon Corporation.

1.04 DELIVERY, STORAGE AND HANDLING

A. General Requirements: Materials shall be delivered in their original, unopened packages, and protected from exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.

1.05 SITE CONDITIONS

A. Environmental Requirements: Before, during and after installation of Gyp-Crete 2000 and Acousti-Mat II, building interior shall be enclosed and maintained at a temperature above 50 degrees F (10 degrees C).

PART 2 PRODUCTS

B. Priming Acousti-Mat II: Prime Acousti-Mat II using the Maxxon Floor Primer to bond the Gyp-Crete 2000 to the mat.

C. Application: Place Gyp-Crete 2000 a minimum 1 inch (25 mm) thick, over loosely laid Acousti-Mat II. Spread and screed Gyp-Crete 2000 to a smooth surface.

D. Drying: General Contractor shall provide continuous ventilation and adequate heat to rapidly remove moisture from the area until the Gyp-Crete 2000 is dry. General Contractor shall provide mechanical ventilation if necessary. Under the above conditions, for 1 inch thick Gyp-Crete 2000, 7-10 days is usually adequate drying time. To test for dryness, tape a 24 inch by 24 inch (609 mm by 609 mm) section of plastic or high density rubber mat to the surface of the underlayment. After 48-72 hours, if no condensation occurs, the underlayment shall be considered dry. Perform dryness test 5-7 days after pour.

3.04 PREPARATION FOR INSTALLATION OF GLUE DOWN FLOOR GOODS

A. Sealing: Seal all areas that receive glue down floor goods with Maxxon Overspray according to the Maxxon Corporation's specifications. Any floor areas where the surface has been damaged shall be cleaned and sealed regardless of floor covering to be used. Where floor goods manufacturers require special adhesive or installation systems, their requirements supersede these recommendations.

B. Floor Goods Procedures: See the Maxxon Corporation's "Procedures for Attaching Finished Floor Goods to Maxxon Underlayments" brochure for guidelines for installing finished floor goods. This procedure is not a warranty and is to be used as a guideline only.

3.05 FIELD QUALITY CONTROL

A. Slump Test: Gyp-Crete 2000 mix shall be tested for slump as it's being pumped using a 2 inch by 4 inch (50 mm by 101 mm) cylinder resulting in a patty size of 8 inches (203 mm) plus or minus 1 inch (25 mm) diameter.

B. Field Samples: At least one set of 3 molded cube samples shall be taken from each day's pour during the Gyp-Crete 2000 application. Cubes shall be tested as recommended by the Maxxon Corporation in accordance with modified ASTM C 472. Test results shall be available to architect and/or contractor upon request from applicator.

3.06 PROTECTION

A. Protection From Heavy Loads: During construction, place temporary wood planking over Gyp-Crete 2000 wherever it will be subject to heavy wheeled or concentrated loads.

...END OF SECTION 03450

Part II
Division 2

Excavation

SECTION 02050

DEMOLITION

1 PART 1. GENERAL

1.1 SECTION INCLUDES

A. Demolition shall include, unless otherwise noted on Drawings, removal of existing objects or improvements, whether indicated on drawings or not, that would, in the opinion of the owner, prevent or interfere with progress or completion of proposed work.

B. Permits, fees and licenses shall be secured and paid for by Contractor, including disposal charges as required to ensure progress of work will proceed.

C. Work shall comply with requirements of governing authorities in demolition and removal of existing pavement, curbs and gutters, drainage structures, underground fuel tanks, sanitary waste systems
and utilities as may be required.

D. Demolition requires removal and disposal charges as required to ensure progress of work will proceed.

1. Entrance drive, parking pavement and adjacent landscape work to limits indicated on Drawings, or as required by Specifications.

2. Removal of existing wood frame structures in accordance with local requirements and environmental assessment report.

3. Removal of existing perimeter, fencing as noted on the Demolition Plan.

4. Remove existing sanitary service connections, gap service in compliance with City of Portland Standards.

5. Terminate existing electric, telephone and cable services, coordinate with respective utility companies.

6. Terminate existing gas services, coordinate with Northern Utilities.

1.2 RELATED REQUIREMENTS

A. Construction Drawings

B. Geotechnical Report, Environmental Phase 1 and Building Environmental Phase 1.

C. Coordination with public utilities

1.3 JOB CONDITIONS

A. Owner assumes no responsibility for condition of structures or site elements to be demolished or removed.

B. Owner will maintain conditions existing at time of inspection for bidding purposes in so far as practicable.

3 PART III EXECUTION

3.1 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from the site all debris, rubbish and other materials resulting from demolition.

B. Demolition debris removed from the site shall be disposed of at an approved licensed recycling or disposal facility in accordance with state regulations.

C. No burning of any materials, debris or trash on-site will be allowed, except when allowed by the appropriate governing authority. If allowed as stated above, burning shall be performed in a manner prescribed by governing authority. Attend burning materials until fires have burned out or have been extinguished.

END OF SECTION

SECTION 02110

EROSION AND SEDIMENTATION CONTROL

This Plan has been developed as a strategy to control soil erosion and sedimentation during and after construction of the Waterview at Bayside Condominium located at 409 Cumberland Avenue in Portland, Maine. This plan is based on the Maine Erosion and Sedimentation Control Handbook for Construction, Best Management Practices, March 2003.

1.1 PROPOSED DEVELOPMENT

The project consists of the development of a 10,779 square foot twelve story apartment and condominium building with a total of 94 units. The primary pedestrian access to the building will be form Cumberland Avenue, although pedestrian access can occur from three sides of the building. Vehicular access to the site will be from Forest Avenue and a drop-off area will be along the Forest Avenue side of the building. All vehicles will exit the site onto Mechanic Street. Due to the sloping site, handicap accessible and temporary parking will be provided beneath the building. Parking for the project will be provided at the Gateway Garage.

The access drive, building, drainage improvements and site improvements and associated grading define the limits of proposed earth movement for the development. The horizontal and vertical placement of the access drive, walkways and seating areas has been designed to maximize the topographic opportunities available.

1.2 EROSION CONTROL PRACTICES / TEMPORARY MEASURES

The following temporary measures to control erosion and sedimentation shall be utilized:

A. Each ground area, opened or exposed, whether directly or indirectly due to the development, shall be minimized and shall be stabilized within 15 days of initial disturbance of soil and shall be permanently stabilized within seven days of final grading.

B. Temporary soil stabilization shall be either by temporary mulching, permanent base gravel, or as follows:

- Temporary Mulching. Mulch shall consist of chopped hay or straw mulch and spread by mechanical blower evenly at a rate of 150-200#/1000 SF. Temporary mulch shall be removed prior to permanent soil stabilization. Mulch must not be placed over snow. Snow shall be removed prior to mulching.

- Erosion Control Mix. Processed wood chip and soil mix, spread along areas of site adjacent to residential properties.

- Permanent Base Gravel. Base gravel shall be suitable as temporary soil stabilization under the following conditions:

  a. Slopes shall be less than eight percent.
  b. Gravel shall meet the specifications for base or subbase gravel for the proposed completed surface.

B. Winter Construction. The winter construction period is from November 1 through April 15. Winter excavation and earthwork shall be competed such that no more than 1 acre of the site is without stabilization at any one time. Limit the exposed area to those areas in which work is expected to be undertaken during the proceeding 15 days and that can be mulched in one day prior to any snow event. Hay and straw mulch rates shall be a minimum of 150#/1000 SF (3 tons/acre) and shall be properly anchored. The contractor must install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized in order to minimize areas without erosion control protection.

1.4 CONSTRUCTION SEQUENCE

The general sequence of work shall be as follows:

A. Install erosion control devices (silt fence, stabilized construction entrance and or Sediment barrier). Note: when frozen ground conditions exist, silt fence shall be replaced with wood-waste filter berms.

B. Site Demolition; remove all existing structures, pavement and site appurtenances.

C. Temporarily stabilize disturbed areas by mulching all exposed soil within 15 days of initial disturbance.

D. Rough grade and install road/pavement base.

E. Install underground utilities.

F. Install stormwater structures and associated piping.

G. Complete site construction work.

H. Install permanent vegetation on all exposed areas within 15 days of final grading.

I. Perform continuing maintenance on all erosion and sedimentation control devices and measures.

1.5 SITE INSPECTION & MAINTENANCE

Weekly inspections, as well as routine inspections following rainfalls of 0.5" over a consecutive 24-hour period, shall be conducted by the Site Contractor, of all temporary and permanent erosion control devices until final acceptance of the project. Necessary repairs shall be made to correct undermining or deterioration. Final acceptance shall include a site inspection to verify the stability of all disturbed areas and slopes. Until final inspection, all erosion and sedimentation control measures shall immediately be cleaned, and repaired by the General Contractor after storm events. Disposal of all temporary erosion control devices shall be the responsibility of the Site Contractor.

Continued temporary maintenance and long-term provisions for permanent maintenance of all erosion and sedimentation control facilities after acceptance of the project shall be the responsibility of Waterview Development LLC, or Assigns.

SECTION 02200

SITE EARTHWORK

1 PART 1. GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Geotechnical Report – Section 00300

C. Site Drainage - Section 02400

D. Site Utilities - Section 02420

E. Construction Drawings - Refer to architectural plans and specifications for specific requirements regarding the earthwork beneath the building. Where the architectural plans earthwork requirements for the building subgrade pad are more stringent than those stated herein, the architectural plans and specifications shall govern.

1.2 UTILITY EASEMENTS

A. The Contractor shall contact all utility companies and determine if additional easements will be required to complete the project.

1.3 STANDARDS

A. Conform to all applicable city, county and state codes for excavation, earthwork and disposal of debris.

B. Conform to all applicable standards of the various utility companies.

1.4 INSPECTION

A. Drawings do not purport to show above ground objects existing on site. Contractor shall visit site and acquaint himself with all observable conditions as they exist before submitting his Bid.

1.5 GRADE AND ELEVATIONS

A. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interference or to adapt piping to other special conditions encountered.

B. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain by means of suitable stakes placed in the field.

D. Field density tests not specified on a comparative basis shall be to the percent density specified in this Section for both earth excavation and earth and granular type fills. Tests shall be in accordance with ASTM D.1556, ASTM D.2167, ASTM D.2922 OR ASTM D.3017.

1.10 TEST PITS

A. Test Borings have been made in the area of the proposed building and parking area and the logs can be reviewed in Section 00300.

1.11 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Barricade open excavations occurring as part of this work and post with warning signs. Backfilling or secured covering of excavations shall be required.

B. Provide necessary supports, bracing and covering to protect existing and new structures and utilities during all phases of excavation and backfill.

C. Notify appropriate owners before excavating adjacent to poles, cables, pipes, and other utilities.

D. Note that location of existing underground utilities on plans is approximate and may be incomplete. Responsibility for exact locations and protection of all utilities rest with the Contractor. The Contractor shall be responsible for confirming invert elevations for existing and proposed sewer installation and connection. Where location of existing underground utilities differs from that shown on plans, notify the Landscape Architect immediately.

E. Conflicts between existing and new utilities and/or structures to be built under this contract shall be reported to the Landscape Architect or Owner's Representative.

1.12 EROSION AND SEDIMENTATION CONTROL

A. The General Contractor shall perform all work necessary to control erosion. Installation of erosion control structures prior to construction shall be performed in accordance with the Standards of the U.S. Department of Agriculture, Soil Conservation Service, "Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices" by the Cumberland County SWCD, State of Maine, and as shown on the Plans.

B. Weekly inspections, as well as routine inspections following rain falls, shall be conducted by the Contractor of all temporary and permanent erosion control devices until final acceptance of the project. Necessary repairs shall be made immediately to correct undermining or deterioration. Final acceptance shall include a site inspection to verify the stability of all disturbed areas and slopes. Until final inspection, all erosion and sedimentation control measures shall immediately be cleaned, and repaired by the Contractor after each storm event, as required. Disposal of all temporary erosion control devices shall be the responsibility of the Contractor. Removal of temporary erosion control devices shall not occur until a minimum 75% catch of vegetation occurs or permanent structural measures are in place.

1.13 REMOVALS

A. The Contractor shall perform all work necessary for clearing and grubbing and/or removal, backfill and disposal of all existing materials noted on the Drawings, as well as temporary structures installed for construction.

B. Where ordered by the Landscape Architect to stabilize the trench base or for excavation below grade, use 3/4 inch crushed stone.

C. PVC Pipe and Polyethylene Pipe: Use 1/2 inch to 1 inch crushed stone in the zone twelve (12) inches above and six (6) inches below the pipe.

(3) Sand Blanket

A. Use (over and under insulation) where insulation is installed over pipe or culvert and at such other places as required in the Contract Documents, or when ordered by the Landscape Architect. Clean sand, free from organic matter, so graded that 90 - 100 percent passes a 1/2 inch sieve and not more than 7 percent passes a No. 200 sieve. (**Exception:** For corrugated polyethlene pipe where crushed stone is required over top of pipe).

(4) Suitable Backfill Material

A. Structural fill or natural material excavated during the course of construction, excluding debris, pieces of pavement, organic matter, topsoil, all wet or soft muck, peat, or clay, all excavated ledge material, and all rocks over six (6) inches in largest dimension, or any material which will not provide sufficient support or maintain the completed construction in a stable condition, all approved by the Landscape Architect. (**Exception:** may not be used to backfill foundation or under slab).

(5) Geotextile Materials

A. Acceptable Geotextiles and Geogrids:

(1) Mirafi 600x
(2) Phillips 66 Supac 6WS
(3) Dupont Typar 3401 and 3601
(4) Trevira S1114 and S1120
(5) AMOCO 2006
(6) Tensar SS-1 and SS-2
(7) Exxon GTF-200 or 350
(8) Conwed Stratagrid GB-5033
(9) Miragrid 3xT

B. Filter/Drainage Geotextiles:

(1) Mirafi 160N or equal

C. Silt Fencing Geotextiles:

(1) Mirafi 100x or equal

indicated limits. Only suitable materials shall be used or stockpiled for later use in backfill preparation. Disturbed subgrade material shall be removed prior to pouring of footings and replaced with either compacted structural fill or thickened footing concrete. All footing subgrades shall be approved by the owner's representative prior to pouring concrete for footings.

B. The Contractor shall provide temporary drains, ditches and the necessary equipment, as required, to maintain the site of work and adjacent areas in a well drained condition. Keep all excavations free of both ground and surface water at all times. All water pumped or drained from the work shall be disposed of so as not to endanger public health, property or any portion of the work under construction or completed.

C. The Contractor shall provide shoring, sheeting and bracing as may be required to maintain excavations and trenches secure and safe from collapse and to protect adjacent structures.

D. Excavation shall not be made below specified subgrades except where rock or unstable material is encountered. If suitable bearing is not found at levels shown on the Drawings, the Architect and or the Landscape Architect shall be notified in writing immediately so that adjustments or changes may be made. Material removed below specified subgrade without the approval of the Landscape Architect shall be replaced and compacted with an approved gravel at the Contractor's expense.

E. All work shall be carried out in a manner consistent with the regulations of such Federal, State and Local authorities as may have jurisdiction over such activities.

3.4 SUMMARY OF UTILITY INSTALLATION

A. Set all lines, elevations and grades for utility and drainage system work and control system for duration of work, including careful maintenance of bench marks, property corners, monuments or other reference points.

B. Perform all excavation for underground piping and utility systems to the depths indicated on the Drawings or as otherwise specified. Trenches shall be excavated by open cut.

C. Maintain in operating condition existing utilities, active utilities and drainage systems encountered in utility installation. Repair any surface or subsurface improvements shown on Drawings.

D. Verify location, size, elevation and other pertinent data required to make connections to existing utilities and drainage systems as indicated on Drawings. Contractor shall comply with local codes and regulations.

E. Inspection of stormwater system excavation, utility excavation and backfilling subject to review by utility company, city engineer and third party inspection by project engineer.

3.5 EXCAVATION, TRENCHING AND BACKFILLING

A. Perform excavation as indicated for specified depths. During excavation, stockpile materials suitable for backfilling in an orderly manner far enough from bank of trench to avoid overloading, slides or cave-ins.

(4) Electrical Conduits: 40 inches minimum to top of conduit for primary and 30 inches to top of conduit for secondary or as required by NEC 300-5, NE 710-36 codes, or the local utility company requirements, whichever is deeper.

(5) TV Conduits: 18 inches minimum to top of conduit or as required by the local utility company, whichever is deeper.

(6) Telephone Conduits: 18 inches minimum to top of conduit, or as required by the local utility company, whichever is deeper.

3.7 PIPE BEDDING

A. Accurately cut trenches for pipe or conduit that is to be installed to designated elevations and grades to line and grade as specified below bottom of pipe and to width as specified. Place specified depth of bedding material, compact in bottom of trench, and accurately shape to conform to low portion of pipe barrel. After pipe installation, place select bedding material in accordance with details and compact as required.

3.8 TRENCH BACKFILLING

A. Criteria: Trenches shall not be backfilled until required tests are performed and the utility systems comply with and are accepted by applicable governing authorities. Backfill trenches as specified. If improperly backfilled, reopen to depth required to obtain proper compaction. Backfill and compact as specified, to properly correct condition in an acceptable manner.

B. Backfilling: After pipe or conduit has been installed, bedded, and tested as specified, backfill trench or structure excavation with specified material placed in eight (8) inch maximum loose lifts.

C. Fill shall not be placed on a surface of frozen material, nor shall snow, ice, frozen earth or debris be incorporated in the fill. Compact to minimum density of 95% of maximum dry density in accordance with ASTM D 698 (or 92% of maximum dry density in accordance with ASTM D1557). For utility trenches located in pavement and sidewalk areas, place backfill in eight (8) inch maximum loose lifts and compaction to 95% of ASTM D.1557 maximum dry density.

3.9 STRUCTURAL EXCAVATION

A. Earth shall be excavated to the depth and sections required for installation of all catchbasins, manholes, footings, floor slabs or other appurtenant facilities to the extent indicated on the Plans. Care shall be taken that the foundation areas of structures are not excavated below subgrade or are disturbed so as to lessen their bearing capacity.

B. All excavations for structures shall be sheeted, braced, sloped, or otherwise protected in the same manner and meeting the safety requirements and conditions specified above under paragraph Section 3.6 (b). Any excess excavated material shall be removed from the site.

3.10 ROCK EXCAVATION

A. Soils investigations indicate that removal of rock will not be required for this project. The Contractor shall take the following steps:

(1) Uncover and expose material claimed as rock.

with a surface suitable for laying the pipe or building structure. Following their use, underdrains shall be plugged as directed by the Landscape Architect.

3.12 COMPACTION

A. Compaction densities specified herein shall be the percentage of the maximum dry density obtainable at optimum moisture content as determined and controlled in accordance with ASTM D.1557. Field density tests shall be made in accordance with ASTM D.1556, D.2167 or D.2922. Each layer of backfill shall be moistened or dried as required, and shall be compacted to the required densities unless otherwise specified in the project specifications.

B. Fills placed under footings, floor slabs, roads, parking areas and walks shall be compacted to not less than 95 percent of the ASTM D - 1557 maximum dry density.

C. The subbase material placed under the road gravel base in fill areas shall be compacted to not less than 95 percent of the ASTM D1557 maximum density.

D. Fills adjacent to building walls from the exterior face of the building and/or retaining walls to a point not less than 10'-0" from the exterior face of the wall shall be compacted to not less than 95 percent of the ASTM D. 1557 maximum compaction dry densities as herein before specified.

E. Bedding material and trench sand under pavement: 95%

F. Bedding material and trench sand non-pavement areas: 92%

G. Loam areas: 90%

H. All other areas: 85%

I. Methods and equipment proposed for compaction shall be subject to the prior acceptance by the Owner's representative. Compaction generally shall be done with vibrating equipment. Refer to recommendations in the Geotechnical Report in Section 00300 by Hale & Aldrich, Inc., dated March 2005. Displacement of, or injury to the pipe and structure shall be avoided. Movement of in-place pipe or structures shall be at the Contractor's risk. Any pipe or structure damaged thereby shall be replaced or repaired as directed by the Landscape Architect and at the expense of the Contractor.

3.13 FILLING AND SUBGRADE PREPARATION - BUILDING AREA

A. The recommendations for filling and subgrade preparation for the building area shall be in accordance with the Geotechnical Report, prepared by Haley & Aldrich, Inc. dated March 2005.

B. Building subgrade pad shall be that portion of site directly beneath and ten feet (10') beyond the building and appurtenant limits.

C. Unless specifically indicated otherwise on the Drawings, areas exposed by excavation or stripping and on which building subgrade preparations are to be performed, shall be compacted to a minimum of 95% of the Modified Proctor Maximum Dry Density (MPMDD). Building floor slab subgrades consisting of native sands, silty sands shall be compacted with a 15 ton highway roller to achieve 95% of MPMDD to a minimum of 12 inches.

B. Correct all settlement and eroded areas within one year after date of completion at no additional expense to Owner. Bring grades to proper elevation. Replant or replace any grass, shrubs, trees or other vegetation disturbed by construction using corrective measures.

3.16 FIELD QUALITY CONTROL

A. If Owner elects to test, an independent testing laboratory selected and paid by the Owner shall be retained to perform construction testing on site. Field density test may be ordered for each foot of depth of backfill at an average of 200 feet along the trench.

B. If compaction requirements are not complied with at any time during the construction process, remove and recompact deficient areas until proper compaction is obtained at no additional expense to Owner.

C. The independent testing laboratory shall prepare test reports that indicate test location, elevation data and test results. The Owner, Architect and Contractor shall be provided with copies of reports within 72 hours of time test was performed. In the event that any test performed fails to meet these Specifications, the Owner and Contractor shall be notified immediately by the independent testing laboratory.

D. All costs related to retesting due to failures shall be paid for by the Contractor at no additional expense to the Owner. The Owner reserves the right to employ an independent testing laboratory and to direct any testing that is deemed necessary. Contractor shall provide free access to site for testing activities.

3.17 TESTING

A. Field density test may be ordered by the Landscape Architect for each foot of depth of backfill at an average interval of 200 feet along the trench.

B. The Contractor shall furnish all necessary samples for laboratory tests and shall provide assistance and cooperation during field tests. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.

C. Any costs of re-testing required as a result of failure to meet compaction requirements shall be borne by the Contractor.

3.18 WORK IN PUBLIC STREETS

A. Work done in existing Municipal streets shall be done in accordance with local and/or State requirements as applicable.

3.19 CLEAN-UP

A. The Contractor shall remove all debris, construction equipment, and material from the areas to be loamed and seeded.

END OF SECTION

SECTION 02400

SITE DRAINAGE

1 PART 1. GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Geotechnical Report Site Environmental Phase 1 and Existing Building Environmental Phase 1 - Section 00300

C. Site Earthwork - Section 02200

D. Site Utilities - Section 02420

E. Construction Drawings

1.2 QUALITY ASSURANCE

A. It is the intention of this Section that the catchbasins, manholes, field inlets and other structures, including all component parts, have adequate space and strength considered necessary for the intended service. Space requirements and configurations shall be as shown on the Drawings.

B. Catchbasins and manholes shall be an assembly of precast sections with or without steel reinforcement, with approved jointing. In any approved structures, the complete structure shall be of such material and quality as to withstand loads of eight (8) tons (H-20 loading) without failure, continuously for the life of the structure. Assume a period in excess of 25 years for all structures.

1.3 SUBMITTALS

A. The Contractor shall submit the following information with sets of As-Built Drawings:

(1) Shop Drawings of pipe and precast units, catchbasins, manholes and field inlets.

(2) Manufacturer's information of joint sealants, gaskets and waterproofing.

(3) Storm drain pipe. Pipe of the same manufacturer shall be used throughout the project.

(4) Frame and grate for all structures, frame and grate for structures within the public right of way shall conform to the City of Portland Technical Design Standards and Guidelines, latest edition.

(5) Source and gradation reports for soil materials.

(6) Manufacturer's information of physical, filtration/hydraulic, and mechanical properties of geotextile fabrics.

(1) Polyvinyl Chloride (PVC) Pipe: Pipe and fittings shall comply with ASTM D 3034, rated SDR 35. Pipe shall be continually marked with manufacturer's name, pipe size, cell classification, SDR rating, and ASTM D 3034 classification. Pipe joints shall be integrally molded bell ends in accordance with ASTM D 3034, Table 2, with factory supplied elastomeric gaskets and lubricant.

(2) Reinforced Concrete Pipe (RCP): Comply with requirements of ASTM C 76, Class III unless another class type is indicated on Drawings, installed with flexible plastic (Bitumen) gaskets at all joints. Gaskets shall comply with AASHTO M-198 75I, Type B, and shall be installed in strict accordance with pipe manufacturer's recommendations.

(3) Corrugated Polyethylene Pipe (CPP) Smooth Interior: Conform with AASHTO Designations M 294 and M252. Pipe must be installed in accordance with pipe manufacturer's installation Guidelines for Culvert and Other Heavy-Duty Drainage Applications. Acceptable manufacturers: Advanced Drainage Systems, Inc. (ADS) N-12) & Hancore, Inc. (Hi-Q smooth interior).

(4) Foundation Drains and Underslab Drains: Pipe shall be perforated PVC pipe having a SDR of 35 or equivalent. Perforations shall consist of 3/8 inch diameter holes.

C. Brick: Comply with the ASTM Standard Specifications for Sewer Brick, Designation C32, for Grade SS, hard brick.

D. Cement: Shall be Type II. Concrete shall have a minimum strength of 3,000 psi at 28 days.

E. Structural Fill for foundation drain backfill - M.D.O.T. 703.06, (a), Type C.

F. Drainage Stone: M.D.O.T. 703.22 Type C. 3/8 - inch, pea stone or 3/4- inch crushed stone

G. Geotextiles: Shall be Mirafi 160 N or equivalent for filtration fabric or equivalent.

3 PART 3. EXECUTION

3.1 CATCHBASINS, MANHOLES, AND FIELD INTLETS

A. After the excavation has been done and leveled, six (6) inches of bedding material shall be put in the bottom of the excavation, leveled and thoroughly compacted.

B. Precast concrete sections shall be set so as to be vertical and with section in true alignment, 1/4-inch maximum tolerance to be allowed.

C. Invert channels of manholes may be formed in 3,000 psi concrete or using brick. When brick is used, use Portland cement, ASTM C 150, Type II. Masonry cements shall not be used. The top shelf shall slope to drain towards the flowing through channel.

D. The top of the precast reinforced concrete unit shall be set at a grade that will allow a minimum of two (2) courses and a maximum of three (3) courses of brick and mortar before setting the cast-iron frame. Mortar for brick masonry shall be Portland cement, Type II, mixed in the proportion of one part cement to two parts sand, worked to the proper consistency.

B. Lay each pipe length so it forms a close joint with the adjoining length and bring the inverts to the required grade, without high spots. Do not drive the pipe down to grade by striking it with a shovel handle, timber, hammer, or any other unyielding object. When each pipe length has been properly set, place and compact enough of the bedding material between the pipe and the sides of the trench to hold the pipe in correct alignment. After filling the sides of the trench, place and lightly tamp bedding material to complete the bedding as shown on the Drawing. Take all necessary precautions to prevent floatation of the pipe in the trench.

C. Temporary Plugs - When pipe installation work in trenches is not in progress, close the open ends of the pipe with temporary watertight plugs. If water is in the trench when work is resumed, do not remove plugs until all danger of water entering the pipe is eliminated. Do not use the pipelines as conductors for trench drainage during construction.

D. Jointing - Connect pipe in accordance with the latest manufacturer's instructions and recommendations. Clear each pipe length, coupling and fitting of all debris and dirt before installing. Provide and use coupling pullers for jointing the pipe. Provide gasket feeler gauges for use by the pipe layer for checking the position of the rubber gaskets in the completed joints.

E. Shove home each length of pipe against the pipe previously laid and hold securely in position. Do not pull or cramp joints. Make all pipe joints as watertight as possible with no visible leakage and no sand, silt, clay, or soil of any description entering the pipeline at the joints. Immediately after making a joint, fill the holes for the joints with bedding material, and compact.

F. Pipe Cutting - Cut in accordance with manufacturer's recommendations. Cut the pipe with a hand saw, metal-inserted abrasive wheel or pipe cutter with blades (not rollers). Examine all cut ends for possible cracks caused by cutting.

G. Inspection - Pipe installation shall be subject to inspection by the project Landscape Architect or Owner's representative, for quality, adherence to line and grade, jointing, and proper backfill. Any joint not satisfactory to the project Landscape Architect or Owner's respresentative shall be removed and remade to his satisfaction at the Contractor's expense. No pipe shall be backfilled until it has been approved by the Landscape Architect.

3.4 FOUNDATION DRAIN PIPE

A. Bed all foundation drains in Drainage Stone, wrapped in Mirafi 160 N geotextile filter fabric or approved equal, as shown on the drawings.

B. Shape subgrade to drain outlets as shown on the grading and drainage plan.

C. Install geotextile stabilization fabric between subgrade and pavement subbase gravel, as determined by the geotechnical engineer or Owner's Representative.

3.5 PIPE INSULATION

A. Install two (2) inch thick by four (4) feet wide styrofoam SM insulation as manufactured by Dow Chemical Co., or approved equal, as shown on Detail Drawing.

B. Install over and along the sides of the pipe when there is less than four (4) feet of cover between the top of pipe and original ground grade.

SECTION 02470

DRILLED SHAFTS/PIERS

PART 1. GENERAL

1.1 General Requirements

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 Description of Work

A. General

1. The Work covered by this Section, without limiting the generality thereof, consists of furnishing all plant, labor, equipment, appliances and material and performing all operations in connection with the installation of foundations to support column loads with fully cased rock socketed drilled shafts/piers to the lines and grades shown on the Drawings.
2. The Contractor shall include all Work necessary to maintain a stable excavation during drilling and concreting.

B. The work under this section within shall include installing a permanent steel casing as shown on the drawings in order to provide an outer sleeve for drilling and shaft/pier construction.

C. The Contractor shall manage drill spoils generated from shaft/pier installation. Drill spoil solids will be removed from the site, and disposed by the Contractor.

D. Installation of reinforcing as shown on the drawings and placement of tremie concrete from the bottom of each shaft to cut-off elevation.

E. The Contractor shall protect adjacent buildings, property, streets, public utilities and structures, and completed work, from damage associated with excavation operations.

F. Remnants of old utilities, foundations, walls, slabs, and other buried structures may exist within the site area and may be encountered during drilled shaft/pier excavation.

G. Prior to shaft/pier construction, determine location of utilities. Protect, maintain and/or relocate according to Drawings, utilities interfering with shaft/pier construction.

H. Support and protect utilities if and as necessary. The Contractor shall be responsible for all damage to utilities caused by shaft/pier construction operations. Fully and promptly

B. The time period(s) for submittals are the minimum required by contract for the Owner's Representative to review, evaluate and respond to the Contractor. If, after review, the Owner's Representative requires resubmission for any reason, the specified time period(s) shall commence upon the date of receipt of the re-submittals. The Contractor is responsible for scheduling specified submittals and re-submittals so as to prevent delays in the work.

C. The Contractor shall submit for review a list of at least five projects indicating relevant previous project experience. Experience shall emphasize rock drilling/coring for foundation units to similar sizes and depths as required in these Contract Documents. The submittal shall include project names, locations and a list of references for each project who can attest to the Contractor's performance on the project.

D. Shop Drawings shall include plan layout (scale 1 in.= 10 feet.) of drilled shafts/piers, showing the proposed location, length, diameter, bottom elevation, and identification number for each individual unit.

E. Submit procedures, layout, set up of drill spoil segregation and material handling facility, and procedures for disposal of drill spoils. Submittal shall include proposed drill spoil segregation operation and procedures for separating drill spoil solids from liquids.

F. Mix Design, Equipment and Materials:

1. Concrete mix designs and supplies, as required in the Contract Documents.
2. Certificates for reinforcing steel and other steel members incorporated in the design.
3. Description of all equipment to be used for construction of the drilled shafts/piers, including staging areas, space requirements for operations, fabrication of reinforcing cages, and storage of materials.

G. Proposed Means and Methods:

1. Proposed method of continuous monitoring for plumbness and deviation of drilled shafts/piers during excavation and details of corrective measures to be implemented as required.
2. Contractor's proposed method of maintaining stability of excavated drilled shafts/piers when left open overnight.
3. Contractor's proposed method of cleaning the bottom of the drilled shafts/piers prior to tremie concreting, and verifying the depth of the shaft/pier.
4. Contractor's proposed method to remove obstructions that may be encountered at the drilled shaft/pier location.

H. As-Built Records:

1. During drilled shaft/pier construction, the Contractor shall maintain and submit to the Owner's Representative as-built records of the Work. These as-builts shall contain, as a minimum, the following:

   a. Shaft/pier identification.

b. Plan dimensions of the shaft/pier, and top and bottom elevations.
c. Dates and times of shaft/pier excavation, bottom cleaning, reinforcing steel placement, tremie concreting, and volume of concrete placed.
d. Description of soils encountered, description of obstructions and excavation problems, if any, and the time spent.
e. Description of steel reinforcing, threaded inserts, variations from shop drawings, if any.
f. Plumbness and deviation from plan location.

2. During drilled shaft/pier construction, any unusual conditions encountered shall be noted and reported to the Owner's Representative immediately.

PART 2. PRODUCTS

2.1 Materials

A. Concrete for use in drilled shaft/pier shall conform to Section 03300, unless otherwise indicated hereinafter in this Section.

B. Reinforcing steel for use in drilled shafts/piers shall be ASTM A615 Grade 60.

2.2 Concrete

A. The design and testing of concrete mixes for use in drilled shafts/piers shall conform to the requirements of specification section 03300.

1. Minimum compressive strength of 4,000 psi at 28 days.
2. See specification section 03300 Cast-in-place Concrete for additional requirements.

2.3 Reinforcing Steel

A. Reinforcing steel shall be standard deformed steel reinforcing bars conforming to the requirements of ASTM A615, Grade 60.

PART 3. EXECUTION

3.1 General

A. Foundation elements shall be installed by a contractor specializing in the type of work described hereinafter, having experience on similar installations under similar soil, rock and groundwater conditions.

B. The Contractor shall provide a fully equipped excavation rig in full-time operation at the site during the Work, and shall mobilize additional equipment, if necessary, to complete the Work on schedule.

C. The Contractor shall coordinate foundation installation operations with other work on the project.

D. Drilling shall be made in such a manner to prevent loss of ground beyond the specified diameter. The drilling operation shall employ the use of a permanent casing. The permanent casing shall extend a minimum depth of 1 ft.-6 in. below the top of the rock.

3.3 Rock Socket Construction

A. Shafts/piers shall be drilled into the rock to depths as given on the shaft/pier schedule shown on the Drawings or as directed by the Owner's Representative.

B. Suitable rock is defined as hard to moderately hard, slightly weathered Phyllite. Based on review of test boring logs, the top few feet (1 to 2 ft.) of rock may be highly weathered and unsuitable for foundation support.

3.4 Placing Reinforcing Steel and Concrete

A. Do not place steel or concrete until the drill hole has been evaluated by the Owner's Representative.

B. Maintain minimum three inch clearance between and sides of excavation and reinforcement.

C. Prior to placing concrete and reinforcing steel, the bottom of the shaft/pier shall be cleaned of all loose material using equipment designed for that purpose or similar equipment acceptable to the Owner's Representative.

D. Reinforcing steel assemblies shall be accurately located and securely held in place prior to and during the concreting. As the steel cage is lowered into the shaft, suitable guides and spacers, such as concrete skids, shall be used. If the sides of the rock socket are disturbed during installation of the reinforcing steel such that loose rock fragments are found to have accumulated on the bottom of the shaft/pier, the Contractor shall reclean the bottom of the excavation.

E. Concrete shall be placed by tremie pipes, either by gravity flow or by pumping, in such a manner that the concrete fills the shaft/pier progressing from the bottom, rising uniformly to the cutoff elevation and such that intermixing of the concrete and any accumulated water will not occur. The tremie pipe shall be kept as close to the center of the shaft as possible. The tremie pipe shall be suitably made to prevent mixing of the concrete and any accumulated water and shall be of adequate size to permit the free flow of concrete. Initially, there shall be a suitable plug at the bottom of the tremie, which will not discharge concrete until the concrete head has at least reached the level of any accumulated water/fluid in the shaft/pier. Thereafter, a positive concrete head will be maintained throughout.

F. The bottom of the tremie pipe shall be embedded at least 5 ft into the concrete during placement, and this depth shall be maintained throughout the pour.

G. The concrete level during placement shall be kept essentially horizontal.

H. Concrete shall be placed in the drill shaft hole within two hours after placement of reinforcing steel cage and shall proceed continuously until completion of the concreting.

C. No separate measurement for payment will be made for acquisition of permits, backfill, equipment, material disposal, police details, water, electricity, construction dewatering, stockpiling, material rehandling, vibration monitoring, surveying, or other associated items or work considered incidental to the conduct of foundation construction.

D. Whenever mislocation, misalignment, or rejection of a drilled shaft necessitates a structural redesign, the costs of such redesign will be deducted from sums otherwise due to the Contractor under the Contract.

E. Whenever misalignment or rejection of a drilled shaft necessitates structural redesign and/or creation of a cap beam and the redesign structure requires greater quantities of concrete and reinforcing steel, the quantities required will be compared with the quantities required for the original design and the additional labor, equipment, and material will be provided at no additional cost to the Owner.

F. For drilled shafts/piers required and directed by the Architect or Owner's Representative to be drilled deeper into rock than specified on the Contract Documents, the Contractor shall be paid at a unit price per foot of shaft in rock as provided by the Contractor at the time of the bid.

END OF SECTION

SECTION 02471

ROCK ANCHORS

PART 1. GENERAL

1.1 Work Overview

A. Examine all of the Contract Documents to assess full extent of the Work.

B. Coordinate work with that of all other trades affecting or affected by work of this section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 Related Sections

A. Earthwork is specified in Section 02200.

B. Concrete is specified in Section 03300.

C. Reinforcing steel is specified in Section 03300.

1.3 Description

A. The work to be done under thus section includes drilling, furnishing, delivery, unloading, storing, installation, stressing and securing the 140 kip minimum design load permanent rock anchor systems as described herein and as shown on the drawings.

B. Rock anchors shall consist of continuous upset threaded steel bars, provided with a factory-applied double corrosion protection and PVC bond breaker, installed in oversized drilled holes in rock, fully encapsulated with cement grout. Rock anchors shall be post-tensioned to 140 kips, and shall included the associated hardware to facilitate post-tensioning, and connection to the structure.

1.4 References

A. The International Building Code, latest edition.

B. American Society for Testing and Materials (ASTM).

C. American Institution of Steel Construction (AISC).

D. American Concrete Institute (ACI).

E. Post-Tensioning Institute (PTI) "Recommendations for Prestressed Rock and Soil Anchors," Post-Tensioning Manual, Fourth Addition.

1.5 Site and Subsurface Conditions

equipment setup(s) proposed shall be completely independent of the jack, shall included a micrometer dial gauge capable of measuring anchor bar elongation to the nearest 0.001 inch, having two inches of travel, and be mounted on an adjustable tripod or other device with flexible extension arms, or a "gooseneck" to permit rapid alignment of the dial gauge axis with the axis of the rock anchor.

1.7 Quality Assurance

A. Full time monitoring of the Work of this section will be provided by the Owner's Geotechnical Representative. No work shall be completed except in the presence of an authorized representative of the Owner's Representative.

B. Rock anchors, and their installation and testing, shall meet or exceed the minimum requirements specified herein and those recommended by the manufacturer.

C. Comply with all rules, regulations, laws and ordinances of the State of Maine, City of Portland, and all other authorities having jurisdiction. All labor, materials, equipment and services necessary to make work comply with such requirements shall be provided without additional cost to Owner.

D. The Foundation Contractor and anchor supplier shall furnish evidence that they have been engaged in successful installation, supply and testing (respectively) of anchors for a least five years.

E. Rock anchors shall be handled, transported, stacked and protected to prevent damage. The Contractor shall deliver rock anchors at times and in sequence to assure continuity of rock anchor installation.

1.8 Bidding Requirements

A. The base bid of the Contractor shall include the total price for the installation of the estimated quantity of rock anchors indicated on the drawings. This price shall include furnishing of all bars, bearing plates, nuts, washers, drilling hole, cleaning, grouting and redrilling as necessary, installing, tremie grouting, testing and post-tensioning, and all work incidental thereto.

B. Rock anchors rejected in accordance with the provisions of these specifications will not be paid for. The Contractor will be paid at the contract price for one replacement rock anchor installed and accepted according to the previsions of these specifications. If more than one replacement rock anchor is required to compensate for a rejected rock anchor, the Contractor will be paid at the contract price for only one anchor. Additional rock anchors required to compensate for rock anchors installed out of design location shall be installed at no additional cost to the Owner.

C. No separate payment will be made for grouting and redrilling holes.

PART 2. PRODUCTS

2.1 Rock Anchors

D. A plastic cap and plastic nut filled with mastic corrosion inhibitor (grease) will encapsulate the hexagonal nut for corrosive protection.

E. Grease for the coupling and stressing head assembly shall be mastic coating repairs due to damage, bar cutting and installation of end hardware.

PART 3. EXECUTION

3.1 Installation of Rock Anchors

A. Complete foundation excavation to the required footing subgrades indicated on the Drawings and pile installation and construction of pile caps.

B. During construction of formwork and installation of steel reinforcing for the footings, place a suitably-sized Schedule 80 PVC sleeve at anchor locations. PVC sleeves shall extend through the entire footing depth and any flowable fill use to level the bedrock surface, and be plugged during concreting to avoid fouling of the PVC sleeves with concrete.

C. Drilling of Holes:

1. Drill 5-in. diameter holes through the PVC sleeve, a sufficient distance into bedrock to provide the capacities required, but not less than the minimum distance required, as shown on the Drawings. Use percussion drilling methods.
2. Overdrill the hole at least 6 in. deeper than the depth required but not more than 12 in.
3. After drilling, clean each hole of all drill cuttings, sludge and debris prior to grouting.

D. Insert and center the rock anchor in the drill hole. Install the coupling and corrosion protection in accordance with manufacturer's instructions. As a minimum, the coupling shall be centered on the two bars, locked in place by set screws, the annular space filled with grease and protected by heat shrink plastic sheathing.

E. Cement Grouting:

1. Cement grout shall be installed in one phase.
2. Grout the annular space between rock anchor and the drill hole with cement grout using the tremie method to expel all water and loose debris from the drill hole. The bottom of the tremie pipe shall not be raise above the top of the grout in the drill hole during tremie grouting. Grout the entire bar length to the top of the hole. Regrout as necessary if grout settles. The rock anchor will be considered grouted when there is full return of undiluted grout from the top of the hole. If grout loss from the drill hole exceeds three times the volume of the annular space between the drill hole and the rock anchor, grouting will be discontinued, the rock anchor removed from the hole, and the drill fully grouted. Redrill the hole after at least one day.

F. Tensioning of rock anchors:

SECTION 02420

SITE UTILITIES

1 PART 1. GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Site Earthwork - Section 02200

C. Site Drainage - Section 02400

D. Construction Drawings

1.2 TESTS, PERMITS, INSPECTIONS, AND CODES

A. Sewer and water lines shall be tested before use. Coordination required with public utilities.

B. Utility installations shall comply with all applicable local and state codes and with requirements of Portland Water District and City of Portland Sewer Division.

C. All utility installations shall be inspected and approved by the project Landscape Architect or Owner's authorized representative before being backfilled and also by utility company inspectors and local code enforcement as applicable.

D. The Contractor shall obtain and pay for any permits required for this portion of the work.

1.3 SUBMITTALS

A. Refer to Section 02400, Paragraph 1.3.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, meter pit and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents: Record actual locations of piping mains, valves, connections; thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

E. All materials including pipe, valves, hydrants, etc., shall be subject to approval by the Portland Water District. Refer to attached standards.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with the City of Portland technical Design Standards and Guidelines and the Portland Water District requirements. The Contractor shall comply with the requirements contained within this section and those contained within the

A. Concrete for Thrust Restraints: Concrete type specified in Section 03300.

3 PART 3. EXECUTION

3.1 TRENCHES

A. Pipe trench excavation and backfill shall be as specified in Section 02200 - Site Earthwork.

3.2 PIPE JOINTING AND PIPE LAYING: SANITARY SEWER

A. Pipe Jointing - All joints shall be made in a dry trench and in accordance with the manufacturer's recommendations and the best practices for class of pipe laid. The ends of the pipe shall be wiped clean before making the joint.

B. Pipe Laying - The pipe shall be accurately laid to the line and grades to the satisfaction of the Landscape Architect or the Owner's authorized representative. Sewer pipe shall be placed on six (6) inches of specified crushed material. The line and grade may be adjusted by the project Landscape Architect or the Owner's authorized representative and the City Engineering Department representative from that shown on the Drawings to meet field conditions and no extra compensation shall be claimed therefore. Whenever the nature of the material excavated is such as to render it unsuitable for bedding, the Contractor shall furnish suitable material as otherwise provided in these Specifications.

C. The interior of each length of pipe shall be swabbed and wiped clean before laying the next length. No length of pipe shall be laid until the previous length has had specified material placed and tamped around it to secure it firmly in place to prevent any disturbance. Bell ends shall be laid uphill. Whenever the work is stopped temporarily for any reason whatever, the end of the pipe shall be carefully protected against dirt, water or other extraneous material.

D. The pipe shall be cut as necessary. Sufficient short lengths of pipe shall be furnished so that pipe shall not be more than four (4) feet in length at points of connection with other piping.

E. Inspection - Pipe installation shall be subject to inspection by the Landscape Architect or Owner's authorized representative for quality, adherence to line and grade, jointing and proper backfill. Any joint not satisfactory to the Inspector shall be removed and remade to his satisfaction at the Contractor's expense. No pipe shall be backfilled until it has been approved. All work must conform to the City of Portland standards for the sanitary installation.

F. Safety regulation of the State of Maine and the Federal Government, as applicable, shall be followed in regards to work in trenches and trench excavations.

3.3 MANHOLE CONNECTION

A. Neatly cut off main flush with inside of existing manhole where they enter structure walls, and point up irregularities and rough edges with nonshrinking grout. Shape inverts for smooth flow across structure floor as shown on Drawings. Use concrete and mortar to obtain proper grade and contour and finish surface with fine textured wood float.

3.9 INSPECTION

A. The manufacturer shall certify to the Owner that all pipe and fittings furnished under this contract conform to these Specifications.

B. Acceptability of pipe shall be determined by results of strength tests and by inspection at point of delivery to determine whether pipe conforms to Specifications in design and freedom from defects. Rejection on results of field inspection may be made on account of any of the following:

(1) Variations in any dimensions exceeding permissible variations.

(2) Visible cracks, holes, foreign inclusions or other injurious defects.

(3) Any pipe or fittings showing a crack and any fitting or pipe which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from work.

(4) Variation of more than 1/16 inch per linear foot in alignment of pipe intended to be straight.

(5) Insecure attachment of spurs or branches.

3.10 BACKFILLING

A. Backfilling shall be done with approved materials free from roots, frozen pieces, rubbish, large clods or stones. Backfill materials shall be placed in trenches evenly and carefully around and over the pipe in layers. Each layer shall be thoroughly and properly compacted.

3.11 TESTING

A. Whenever practical, before the trench has been backfilled or the joints covered, the pipe shall be tested for leaks. The test may also be made with one foot of backfill placed on the pipe, or the pipe may be completely backfilled. All leaks above the allowable maximum shall be repaired, however regardless of when tests are made. The Contractor shall provide all necessary equipment including but not limited to an appropriate pump, water container, pressure gauge, valve, hydrant connection and corporation stop connection, and he shall perform all work required in connection with the test.

B. Each section tested shall be slowly filled with water, care being taken to expel all air from the mains and service lines, if installed. If necessary, the pipes shall be tapped at high points to vent the air. All foreign material shall then be flushed from the main. If possible, a flushing velocity of fps shall be run through the mains until clean.

C. The portion to be tested shall be placed under constant 150 percent of working pressure or 100 psi whichever is greater as designated by the project engineer, all leaks shall be repaired, additional tests instituted and continue the process until all major leakages are eliminated. The test pressure shall be at the minimum pressure at highest point in the water line. Further, line test pressure shall not exceed 15% of the pressure rating at the lowest point.

3.16 CLEAN-UP

A. Upon completion of the installation of the sanitary sewers, appurtenant structures, water distribution system and any other work incidental thereto, the Contractor shall remove from the project all equipment, surplus construction materials and debris of any type resulting from the work and shall leave the area in as good or better condition as prior to construction.

END OF SECTION

SECTION 02470

BITUMINOUS CONCRETE PAVING

PART 1. GENERAL

1.1. Related Work Specified Elsewhere

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Site Earthwork - Section 02200.

C. Construction Drawings.

1.2 References

A. State of Maine Department of Transportation Standard Specifications Highways and Bridges, latest revision, hereafter designated as MDOT Specifications.

1.3 Material Certificates

A. Submit materials certificate to onsite independent testing laboratory, which is signed by material producer and Contractor, certifying that materials comply with, or exceed, the requirements herein.

PART 2. PRODUCTS

2.1 Materials

A. Bituminous Concrete (roadway and parking) - An approved hot plant mix conforming to MDOT Standard Specifications (latest revision). Use Grading B mix for binder and C mix for surface.

PART 3. EXECUTION

3.1 Bituminous Concrete Paving

A. The Contractor shall be responsible that gravel is in proper condition to pave before starting work.

B. Proof roll prepared base material surface to check for areas requiring additional compaction and areas requiring removal and recompaction.

C. Do not begin paving work until deficient base material areas have been corrected and are ready to receive paving.

D. Pavement mix for roads and parking areas shall be as herein specified and shall consist of the following courses after compaction:

H. Do not permit maneuvering of excavating equipment, lifts or other vehicles with tight turning or tracking capabilities on finished surface. Damaged areas shall be restored by Contractor at no additional expense to Owner.

3.3 Field Quality Control

A. Grade Control: Establish and maintain required lines and elevations.

B. Thickness: In-place compacted thickness shall not be less than thickness specified on the Drawings. Areas of deficient paving thickness shall receive a tack coat and a minimum one (1) inch overlay; or shall be removed and replaced to the proper thickness, at the discretion of the Owner; until specified thickness of the course is met or exceeded at no additional expense to the Owner.

C. Surface Smoothness: Testing shall be performed on the finished surface of each asphalt concrete course for smoothness, using 10' - 0" straightedge applied parallel with, and at right angles to centerline of paved area.

The results of these tests shall be made available to the Owner upon request. Surfaces will not be acceptable if exceeding following tolerances for smoothness:

Base Course Surface:	1/4"
Wearing Course Surface:	3/16"

D. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable paving as directed by Owner.

E. Compaction: Field density tests for in-place materials shall be performed by examination of field cores in accordance with one of the following standards:

(1) Bulk specific gravity of paraffin-coated specimens: ASTM D-1188.
(2) Bulk specific gravity using saturated surface-dry specimens: ASTM D-2726.

F. Rate of testing shall be one (1) core per 20,000 square feet of pavement, with a minimum of three (3) cores from heavy-duty areas and three (3) cores from standard-duty areas. Cores shall be cut from areas representative of the project.

G. Areas of insufficient compaction shall be delineated, removed and replaced in compliance with the specifications at no expense to the Owner. Areas damaged by construction equipment shall be repaired to satisfaction of Owner at no expense to Owner.

END OF SECTION

SECTION 02772

GRANITE CURBING

PART 1. GENERAL

1.1 Related Work Specified Elsewhere

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Common Excavation, Embankment and Compaction – Section 02315.

C. Construction Drawings

1.2 References

A. Where M.D.O.T. appears it shall be taken to mean The State of Maine Department of Transportation Specifications, Highways and Bridges - Latest Revision.

PART 2. PRODUCTS

2.1 Materials

A. Vertical and Sloped Granite Curb: Granite curb shall conform to M.D.O.T. specifications for TYPE I and TYPE V. Curb shall be acceptable granite from approved quarries.

B. Tip-Down and Transition Granite Curb: Miscellaneous Granite Curb Sections shall conform to M.D.O.T. Specification 712.04 (b).

C. All granite curb shall conform to the following standards.

(1) All granite curb shall be basically light gray in color, free from seams and other structural imperfection or flaws which would impair its structural integrity, and of a smooth splitting appearance. Natural color variation characteristic of the deposit from which the curbing is obtained will be permitted.

(2) The exposed face shall be smooth quarry split to an approximately true plane having no projections or depressions which will cause over one (1) inch to show between a two (2) foot straight-edge and the face when the straight-edge is placed as closely as possible on any part of the face.

(3) If projections on the face are more than that specified they shall be dressed off. The top and bottom lines of the face shall be pitched off to a straight line and shall not show over one (1) inch between stone and straight-edge when straight-edge is placed along the entire length of the top and bottom lines and when viewed from a direction at right angles to the plane of the face, and for the top line only not over (1) inch when viewed from a direction in the plane of the face. The ends shall be square to the length at the face and so cut that when placed end to end as closely as possible, no space shall show in the joint at the face of over 3/8 inch, except that where the edging is to be used on a curve having a radius of ten (10) feet or less, the ends of the stones shall be so cut as to provide a finished joint at the face section of not more than 1/2 inch. The arras formed by the intersection of the plane of the face with the plane of the end joint shall not

SECTION 02780

PAVERS - CONCRETE, BRICK AND GRANITE

1 PART 1. GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

B. Site Earthwork - Section 02200.

C. Bituminous Concrete Paving – Section 02470

D. Construction Drawings.

2 PART 2. PRODUCTS

2.1 MATERIALS

A. Concrete Pavers - Paving stone for handicap curb ramp, seating plaza and paver walkway shall be 4" x 8" nominal, paving stone. All 4" x 8" pavers shall be 2-3/8" thick, with average minimum compressive strength of 8,000 psi with no individual unit under 7,200 psi, and absorption rate of 5 percent, with no unit greater than 7 percent (ASTM C 140) when tested in accordance with ASTM 936-82. Paver for the handicap ramps shall be **Holland Stone with a Score, color "Granite Gray"**, pavers for seating plaza and seating area shall be **Holland Stone, (colors to be determined).** All pavers as manufactured or distributed by Duracon Paving Systems, Genest Concrete - Wilson Street, P.O. Box 151, Sanford, Maine 04073 or approved equal.

B. Concrete Paver and Joint Sealant – Surebond SB-1370 joint stabilizing sealer as manufactured by Surebond East, Inc.

C. Brick pavers for brick sidewalks shall be of standard size; two and one-forth inches (2-1/4") by three and five eighths inches (3-5/8") by eight inches (8"), extruded, solid, flashed-face without frogging, conforming to ASTM C-216 Grade SW, Union Square/Blush Red Velour as manufactured by Lachance Brick Co., Auburn, Maine.

1. The absorption limits shall be from 5 to 12 percent for the average of 5 bricks.

2. The compressive strength shall not be less than 6,000 PSI.

3. The modulus rupture shall not be less than 1,000 PSI

D. Granite pavers for main building entries shall be 2" thick, unit size vaires (see plan). Granite shall be gray with thermal finish, sawn edge and sawn bottom. Granite shall be uniform in grain and color.

SECTION 02945

LANDSCAPING

PART 1. GENERAL

1.1 Related Work Specified Elsewhere

A. The general provisions and documents of the Contract, including General and Special Conditions, apply to the work specified in this Section.

A. Site Improvements - Section 02870

C. Construction Drawings

1.2 Scope

A. Work under this Section shall include all labor, materials, services, equipment and accessories necessary to furnish and install trees, shrubs, and turf in accordance with the specifications and applicable Drawings.

1.3 Certification of Acceptability

A. Inspection of the work covered by this Section to determine completion of the work involved will be made at the conclusion of the Maintenance Period upon written notice requesting such inspection submitted by the Landscape Contractor at least ten (10) days prior to the anticipated date. The condition of turf and plantings will be noted and determination made by the Landscape Architect whether maintenance shall continue.

1.4 Standards

A. Provide plants which are true to name. Tag one of each bundle or Lot with the name and size of plants and shall conform to ANSI Z260.1 - Nursery Stock, latest edition, of the American Association of Nurserymen, Inc.

B. Workmanship: Perform work in accordance with the best standards of practice for Landscape work and under the continual supervision of a competent foreman capable of interpreting the Drawings and Specifications.

C. Submit documentation to Landscape Architect of Record within twenty-five (25) days after award of contract stating that plant material is available. Any and all substitutions due to unavailability must be requested in writing prior to confirmation of ordering.

D. Plants shall be subject to review and approval of Landscape Architect of Record at place of growth or upon delivery for conformity to specifications. Such approval shall not impair the right of review and rejections during progress of the work. Submit written request for review of plant material at place of growth to Landscape Architect of Record. Written request shall state the place of growth and quantity of plants to be reviewed. Landscape Architect of Record reserves the right to refuse review at this time if, in his judgement, sufficient quantity of plants is not available for review. Review shall be for character and form.

(4) Lime - Commercial ground lime with no less than 85% total carbonates, 50% passing a 100 mesh sieve and 90% passing a 200 mesh sieve as approved by the Landscape Architect. Coarser material will be accepted provided that specific rates of application increased proportionately.

(5) Compost soil amendment – Acceptable compost for "compost manufactured topsoil" shall conform to EPA Chapter 40 CFR 503 (pathogen, metals and vector attraction reduction) as well as applicable state regulations.

C. Commercial Fertilizer

(1) Seeding - 19-26-5 dust free homogenous granular material such as Scotts Pro-Turf Starter Fertilizer or an approved equal (application rate as recommended by manufacturer).

(2) Sodding - 10-6-4 with 50% nitrogen derived from ureaform, such as Agway Turfwood Special Premium or an approved equal (application rate as recommended by manufacturer).

(3) Superphosphate - 0-20-0 in unopened bags with manufacturer analysis printed on the bag.

D. Plant Materials - Furnish plants shown and specified on the Drawings and listed in the plant materials list. Discrepancies between the number of plants shown on the Drawings and the number listed in the plant list shall not be grounds for additional remuneration for the Contractor. Plants shall be nursery grown, typical of their species or variety and have a normal habit of growth. Any plant with broken, damaged, or badly bruised branches, trunks, or root balls shall be rejected.

(1) Sizes: Plants larger than specified in the plant list may be used if approved by the Landscape Architect but use of such plants shall not increase the contract price. If the use of the larger plants is approved, the spread of roots or ball of earth shall be increased in proportion to the size of the plants.

(2) Substitutions: In the event that trees, shrubs or other plant material specified in the plant list are impossible or unreasonably difficult to obtain, the Contractor shall immediately notify the Landscape Architect to discuss appropriate substitutions. No substitutions of plant material may be made without the approval of the Landscape Architect.

E. Grass Seed

(1) Grass Seed mixtures shall be fresh, clean, new crop seed. Seed may be mixed by an approved method on the site, or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers which shall bear the dealer's guaranteed statement of the composition of the mixture and the percentage of purity of each variety. The Dealer's Guarantee Statement shall be delivered to the Landscape Architect.

(2) Grass seed mixture shall be of the following types of seed:

- Lawn Areas:

  Park Mix by Allen, Sterling & Lothrop or approved equal

C. Watering (as required) of plant material shall continue for the duration of the maintenance period until certification of acceptability.

3.6 Loaming and Seeding

A. Conduct planting operations under favorable weather conditions. Areas not required to be developed otherwise shall be seeded to turf.

B. Compost Manufactured Topsoil – The soil (source material) shall be free of lumps, plants, weeds, roots and other debris over 2 inches in any dimension and free of stones over inch in any dimension. The organic compost shall be uniformly incorporated into the loam source by rolling and tumbling, by a front-end loader or by processing in a mixing plant. The material shall be mixed sufficiently to produce a homogenous soil, free of lumps and clods. In addition to the requirements for the compost amendment, the Contractor shall provide documentation that the recommended rate of fertilizer, per the testing analysis, has been applied to lawn areas prior to seeding.

C. Prior to placing loam, scarify subgrade areas; remove all rocks over two (2) inches and debris; and set grade stakes as necessary. Place topsoil evenly over all areas to be loamed to a minimum thickness of six (6) inches. Hand rake to remove clods, lumps, brush, roots, and stones over ¾ inch in diameter. Hand roll to show depressions and uneven grades. Regrade as necessary to obtain smooth, even grades. Surplus topsoil shall become the property of the Contractor and shall be removed off the site.

D. Apply additives (lime, fertilizer, compost etc.) as per the recommendation of the testing lab. Apply additives and harrow into top two (2) inches of the seedbed.

E. Sow seed specified by use of a mechanical spreader at the rates specified. Rake lightly in; roll with 200 lb. roller and water with a fine spray.

F. Following compaction, apply a one- (1) inch layer of straw to hasten germination.

G. Full even growth in all areas must be guaranteed. The maintenance period shall continue after seeding and until the lawns are certified acceptable by the Landscape Architect.

H. Repair damage resulting from erosion, gullies, washouts or other similar causes if such damage occurs before certification of acceptability of turf and planting by the Landscape Architect.

I. Sod - After all grading has been completed, the soil shall be irrigated within 12-24 hours before laying the sod. Sod shall not be laid on soil that is dry and powdery.

J. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote a uniform growth and strength. Care shall be exercised to insure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which cause air drying of the roots.

K. The Contractor shall water sod immediately after installation to prevent drying during progress of the work. It shall then be thoroughly irrigated to a depth sufficient that the underside of the new sod pad and soil immediately below the sod is thoroughly wet.

(5) Damage: Damage resulting from erosion, gullies, washouts, or other causes shall be repaired by filling with topsoil, tamping, re-fertilizing, and sodding by the Contractor at his own expense if such damage occurs prior to certification of acceptability of turf and plantings by the Landscape Architect.

(6) Responsibility: The Contractor's responsibility for maintenance shall cease at the time of certification of acceptability by the Landscape Architect. During the guarantee period, the Contractor shall be held responsible for making replacements, but no maintenance shall be required, other than spraying and dusting.

3.7 Replacement

A. At the end of the guarantee period, inspection will be made by the Landscape Architect upon written notice requesting such inspection submitted by the Contractor at least ten (10) days before the anticipated date. Any plant required under this Contract that is dead or not in satisfactory condition, as determined by the Landscape Architect, shall be removed from the site. These, and any other plants missing due to the negligence of the Contractor, shall be replaced with plants of the same type and size as originally specified. Replanting shall be done as soon as conditions permit, but during the normal planting season. Plant items in accordance with these specifications.

3.8 Clean-up

A. The Landscape Contractor shall remove all debris, construction equipment, excess fill, rocks, and other excess material caused by his work, from the site upon completion of his portion of the work.

END OF SECTION

Part II
Division 3

Concrete

SECTION 03300

CAST -IN-PLACE CONCRETE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Work included: Provide labor, materials, and equipment necessary to complete the work of this Section and, without limiting the generality thereof, furnish and include the following:

1. The extent of cast-in-place concrete work is shown on drawings and includes (but not by way of limitation) formwork, reinforcing, cast-in-place concrete, accessories, finishing, and casting in of items specified under other Sections of the Specifications or furnished by Owner that are required to be built-in with the concrete.

2. Equipment support pads indicated on mechanical drawings to be installed by the Building Contractor.

3. Cast-in-place retaining walls, exterior slabs on grade and other concrete shown on site drawings.

1.03 RELATED WORK:

A. Metal Fabrications: Section 05500

1. Expansion Anchors - Section 05120

2. Embedded Items - Section 05500

B. Anchor Bolts: Section 05120

C. Joint Sealants: Section 07900

D. Underslab Vapor Retarders/Wall Waterproofing: Division 7

1.04 QUALITY ASSURANCE:

E. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Division 1 have been complied with.

F. Engineer will review submittals a maximum of two review cycles as part of their normal services. If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate Engineer for additional review cycles.

G. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. Reinforcement certified mill reports covering chemical and physical properties and yield strength.

2. Patching products.

3. Non-shrink grout.

4. Curing compounds, where applicable.

5. Admixtures.

6. Expansion/Adhesive Anchors.

H. Shop Drawings:

1. Shop Drawing Preparation: Electronic files of structural drawings will not be provided to the contractor for preparation of shop drawings. Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI 315, showing bar schedules, stirrup and tie spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required at openings through concrete elements. Include supplemental reinforcing and bar supports necessary to support reinforcing steel at proper location within forms or slabs.

a. Review of the shop drawings will be made for the size and arrangement of reinforcement. Conformance of the Shop Drawings to the Contract Drawings remains the responsibility of the General Contractor. Engineer's review in no way relieves the General Contractor of this responsibility. Submit one print and one reproducible. Print will be reviewed and a reproducible will be returned to Contractor for printing and distribution. Multiple copies will not be marked by Engineer.

b. Shop drawings will not be reviewed as partial submittals. A complete submittal shall be provided all items listed prior. **Incomplete submittals will not be reviewed.**

I. Mix designs: Submit all laboratory test reports and materials for each mix design listed within. Prepare mixes by the field experience method and/or trial mixtures per the requirements of chapter 5 of ACI 318. Include the calculation of average strength and standard deviation. Proportioning by water cement ratio method will not be permitted.

2.03 CONCRETE MATERIALS:

A. Portland Cement: ASTM C 150, Type I or Type II, unless otherwise approved Use one brand of cement throughout project, unless otherwise acceptable to Architect.

B. Normal Weight Aggregates: ASTM C 33. Provide from a single source for exposed concrete. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite, or ochre which can cause stains on exposed concrete surfaces.

C. Light Weight Aggregates: ASTM C 330.

D. Water: Potable.

E. Air-Entraining Admixture: ASTM C 260.

F. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G containing not more than 1% chloride ions.

1. Fiber reinforcing shall be added and distributed prior to incorporation of Super Plasticizer.

G. Normal range water reducing admixture: ASTM C 494 Type A containing no calcium chloride.

H. Accelerating Admixture: ASTM C 494, Type C or E.

I. Blast Furnace Slag: ASTM C989

J. Fly Ash: ASTM C618, Class C or F

K. Calcium Chloride is not permitted.

2.04 RELATED MATERIALS:

A. Underslab Vapor Retarder: Provide vapor retarder over prepared sub base. Refer to architectural drawings, geotechnical report and/or division 7 specifications for additional requirements and vapor retarder location.

B. Non-Shrink Cement-based Grout: Provide grout consisting of pre-measured, prepackaged materials supplied by the manufacturer requiring only the addition of water. Manufacturer's instructions must be printed on the outside of each bag.

1. Non-shrink: No shrinkage (0.0%) and a maximum 4.0% expansion when tested in accordance with ASTM C-827. No shrinkage (0.0%) and a maximum of 0.2% expansion in the hardened state when tested in accordance with CRD-C-621.

2. Compressive strength: A minimum 28 day compressive strength of 5000 psi when tested in accordance with ASTM C-109.

3. Setting time: A minimum initial set time of 60 minutes when tested in accordance with ASTM C-191.

4. Composition: Shall not contain metallic particles or expansive cement.

2.05 PROPORTIONING AND DESIGN OF MIXES:

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 318. Use material, including all admixtures, proposed for use on the project. If trial batch method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Architect.

B. Submit written reports to Architect of each proposed mix for each class of concrete. Do not begin concrete production until mixes have been reviewed by Architect.

C. Proportion design mixes to provide concrete with the following properties:

1. Grade Beams, foundation piers (pilasters) and foundation walls (U.N.O.):

    a. Strength: 4,000 psi at 28 days.

    b. Aggregate: 3/4"

    c. W/C Ratio: 0.50 maximum

    d. Entrained Air: 6% +/- 1.5%

    e. Slump: 4" maximum

2. Foundation piers (pilasters) and foundation walls specified to be 5,000psi:

    a. Strength: 5,000 psi at 28 days.

    b. Aggregate: 3/4"

    c. W/C Ratio: 0.40 maximum

    d. Entrained Air: 6%+/- 1.5%

    e. Slump: 5" maximum

3. Drilled Pier concrete fill:

    a. Strength: 4,000 psi at 28 days.

    b. Aggregate: 3/4"

    c. W/C Ratio: 0.50 maximum

    d. Entrained Air: 6% +/- 1.5%

    e. Slump: 4" maximum

4. Interior Slabs-on-grade (excludes garage):

9. Additional slump may be achieved by the addition of a mid-range or high-range water reducing admixture. Maximum slump after the addition of admixture shall be 6 or 8 inches for mid-range or high range water reducing admixtures, respectively.

D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor, when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Structural Engineer before using in work.

1. Water may be added at the project only if the maximum specified slump and design mix maximum water/cement ratio is not exceeded.

2. Additional dosages of superplastisizer should be used when delays occur and required slump has not been maintained. A maximum of two additional dosages will be permitted per ACI 212.3R recommendations.

2.06 CONCRETE MIXING:

A. Job-Site Mixing will not be permitted.

B. Ready-Mix Concrete: Must comply with the requirements of ASTM C 94, and as herein specified. Provide batch ticket for each batch discharged and used in work, indicating project name, mix type, mix time and quantity.

1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required by Structural Engineer.

2. When the air temperature is between 85 degrees F. and 90 degrees F., reduce the mixing and delivery time from 1 1/2 hours to 75 minutes, and when the air temperature is above 90 degrees F., reduce the mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.01 FORMS:

A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Design, construct, erect, maintain, and remove forms for cast-in-place concrete work in compliance with ACI 347.

C. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.

3. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.

4. Place reinforcement to obtain specified coverage for concrete protection within tolerances of ACI-318. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

5. Install welded wire fabric in flat sheets in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

3.03 JOINTS:

A. Construction Joints: Locate and install construction joints, which are not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to Architect. Submit plan indicating proposed location of construction joints for review prior to beginning work.

1. Provide keyways at least 1-1/2" deep in construction joints in walls, and slabs; bulkheads reviewed by the Engineer, designed for this purpose may be used for slabs.

2. Roughened surfaces shall be used between walls and footings unless shown otherwise on the drawings. The footing surface shall be roughened to at least an amplitude of 1/4" for the width of the wall before placing the wall concrete.

3. Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints.

4. Joints in slabs on grade shall be located and detailed as indicated on the drawings. If saw-cut joints are required, the early-entry dry-cut process shall be used. Refer to ACI 302, section 8.3.12.

3.04 INSTALLATION OF EMBEDDED ITEMS:

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto. Notify other trades to permit installation of their work. Templates to be utilized for setting of anchorage devices shall be constructed in a manner to allow mechanical consolidation of concrete. "Wet Setting" of embedded items into plastic concrete will not be permitted without special permission from the Engineer.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface.

3.05 INSTALLATION OF GROUT

A. Place grout for base plates in accordance with manufacturer's recommendations.

a. Belt conveyors shall be horizontal or at a slope which will not cause excessive segregation or loss of ingredients. Concrete shall be protected against undue drying or rise in temperature. An arrangement shall be used at the discharge end to prevent apparent segregation. Mortar shall not be allowed to adhere to the return length of the belt. Long runs shall be discharged into a hopper or through a baffle.

b. Chutes shall be metal or metal-lined and shall have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20 feet long, and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

c. Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled so that segregation is not apparent in the discharged concrete.

d. Concrete shall not be conveyed through pipe made of aluminum alloy. Standby equipment shall be provided on the site.

e. Tined rakes are prohibited as a means of conveying fiber reinforced concrete.

4. Do not use reinforcement as bases for runways for concrete conveying equipment or other construction loads.

D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 18 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

1. Consolidate placed concrete by mechanical vibrating equipment. Hand-spading, rodding or tamping as the sole means for the consolidation of concrete will only be permitted with special permission from the Engineer. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

2. Use vibrators designed to operate with vibratory equipment submerged in concrete, maintaining a speed of not less than 8000 impulses per minute and of sufficient amplitude to consolidate the concrete effectively. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine, generally at points 18 inches maximum apart. Place vibrators to rapidly penetrate placed layer and at least 6 inches into the preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion maintain the duration of vibration for the time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix, generally from 5 to 15 seconds. A spare vibrator shall be kept on the job site during all concrete placing operation.

E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

3. Wet forms thoroughly before placing concrete.

4. Do not use retarding admixtures without the written acceptance by the Architect.

3.08 FINISH OF FORMED SURFACES:

A. Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This concrete surface shall have texture imparted by form facing material, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 in. in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, damp-proofing, painting or other similar system. This as-cast concrete surface shall be obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

C. Grout Cleaned Finish: Provide grout cleaned finish to scheduled concrete surfaces which have received smooth form finish treatment. Combine one part Portland cement to 1-1/2 parts fine sand by volume and mix with water to consistency of thick paint. Proprietary additives may be used at Contractor's option. Blend standard Portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will closely match adjacent surfaces.

1. Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

D. Related Unformed Surfaces: At tops of walls and grade beams, horizontal offset surfaces occurring adjacent to formed surfaces, strike-off, smooth and finish with a texture matching adjacent uniformed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.09 FLOOR FLATNESS AND LEVELNESS

A. Floor flatness/levelness tolerances: Tolerances for various floor uses should conform to the requirements set forth in ACI 117 and ACI 302 for "flat" floor profile.

1. Minimum Test Area Flatness/Levelness: F_F30/F_L20

2. Minimum Local F Number: F_F15/F_L10

B. Contractor shall measure floor finish within 72 hours after slab finishing and provide corrective measures for finishes not within tolerance. Corrective procedures shall be reviewed by the Architect prior to implementation.

3.10 MONOLITHIC SLAB FINISHES:

A. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds, and as otherwise indicated.

B. Formwork supporting weight of concrete, such as joints, slabs and other structural elements, may not be removed in fewer than 14 days or until concrete has attained design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.

C. Form facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and support.

3.13 REUSE OF FORMS:

A. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and latency, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect.

3.14 MISCELLANEOUS CONCRETE ITEMS:

A. Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

3.15 CONCRETE SURFACE REPAIRS:

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to the Architect.

1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

2. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins, and other projections on surface and stains and other discolorations that cannot be removed by cleaning.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION:

5. Compressive Strength Tests: ASTM C39; one set for each 50 cu. yds. or fraction thereof, of each concrete class placed in any one day or for each 4,000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days, 1 specimen retained in reserve for later testing if required.

6. Pumped concrete shall be tested at point of discharge per ACI 301.

F. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods, as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

END OF SECTION

SECTION 03410

STRUCTURAL PRECAST CONCRETE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Extent of structural precast concrete work is shown on drawings and in schedules.

B. The extent of Structural Precast Concrete is shown on drawings and includes (but not by way of limitation) 8" prestressed concrete planks, all bearing materials, embedded items, accessories and grouting of plank joints.

1.03 RELATED WORK:

A. Section 03300 - Cast in Place Concrete

B. Section 05500 - Metal Fabrications

C. Section 05120 – Structural Steel, Anchor Bolts

D. Section 07900 - Joint Sealants

1.04 QUALITY ASSURANCE:

A. Codes and Standards: Comply with the provisions of the latest edition of the following except where more stringent requirements are shown or specified:

1. ACI 301 "Specifications for Structural Concrete for Buildings."

2. ACI 318 "Building Code Requirements for Reinforced Concrete."

3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

4. Precast/Prestressed Concrete Institute, "PCI Design Handbook, Precast and Prestressed Concrete."

other data to show compliance with specifications (including specified standards).

H. Shop Drawings: Submit shop drawings showing complete information for fabrication and installation of precast concrete units.

1. Indicate member dimensions and cross section

2. Indicate location, size and type of reinforcement, including special reinforcement and lifting devices necessary for handling and erection.

3. Indicate layout, dimensions, and identification of each precast unit corresponding to sequence and procedure of installation.

4. Indicate welded connections by AWS standard symbols.

5. Detail inserts, connections, and joints, including accessories and construction at openings in precast units.

6. Anchorage: Provide location and details of anchorage devices that are to be embedded in other construction. Furnish templates if required for placement.

7. Erection Sequencing: Include erection procedure for precast units and sequence of erection.

I. Performance Design: Design Calculations:

1. Provide complete design calculations prepared and stamped and signed by a registered professional engineer licensed in the State of Maine.

2. Calculations submitted without affixed stamp and signature will be rejected and returned without review.

3. Plank Design Criteria:

a. Design Loads: As indicated on the drawings

b. Code: Comply with ACI 318, Latest Edition

c. Maximum Superimposed Live Load Deflection:

1. Floors: Span/360

2. Roofs: Span/240

d. Planks are to be designed as non-composite

e. Camber: Indicate Camber in design calculations.

f. Structural Steel Plank Headers: Design where required or indicated.

C. Uncoated, 7 wire stress relieved strand complying with ASTM A 416. Use grade 250 unless Grade 270 is required by design and has been indicated on shop drawings.

D. Strand similar to the above, but having the size and ultimate strength of wires increased so that the ultimate strength of the strand is increased approximately 15%, or strand with increased strength but with fewer number of wires per strand, may be used at the manufacturer's option.

E. Steel Wire: ASTM A 82, plain, cold-drawn, steel.

F. Welded Wire Fabric: ASTM A 185.

G. Deformed Welded Wire Fabric: ASTM A 497.

H. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing, complying with CRSI recommendations.

2.03 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type III: Use only one brand and type of cement throughout project, unless otherwise acceptable to Architect.

B. Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete. Local aggregates not complying with ASTM C 33, but which have shown by special test or actual service to produce concrete of adequate strength and durability, may be used when acceptable to Engineer.

C. Water: Potable and free from foreign materials in amounts harmful to concrete and embedded steel.

D. Air-Entraining Admixture: Not Required

E. Water-Reducing Admixture: ASTM C 494, Type A. Types B, C, D or E may be used, subject to the Architect's approval.

F. Cement Grout: Portland cement, ASTM C 150, Type 1, and clean, natural sand, ASTM C 404. Maximum ratio of 3.0 parts sand to 1.0 part cement, by volume.

2.04 RELATED MATERIALS

A. Steel Shapes: ASTM A 36.

B. Bearing Pads: Provide bearing pads for precast hollow slab units in accordance with manufacturer's recommendations and as indicated.

1. Frictionless Pads: Terrafluorethylene (TFE), with glass fiber reinforcing as required for service load bearing stress.

2. Tempered Hardboard Pads: PS 58, smooth both sides.

or placing of concrete. Do not relocate bearing plates in units unless acceptable to Architect.

D. Holes: Cast holes for openings larger than 10" diameter or 10" square in accordance with final shop drawings. Smaller holes will be field cut by trades requiring them, as acceptable to Architect.

E. Form Coating: Coat surfaces of forms with bond breaking compound before reinforcement is placed. Provide commercial formulation form-coating compounds that will not bound with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces requiring bond or adhesion. Apply in compliance with manufacturer's instructions.

F. Surface Preparation: Clean reinforcement of loose rust and mill scale, earth and other materials which reduce or destroy bond with concrete.

G. Reinforcement:

1. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations.

2. Locate and support reinforcing the metal chairs, runners, bolsters, spacers and hangers, as required.

3. Place reinforcement to obtain the specified coverages for concrete protection.

4. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations.

5. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

H. Tendon Pretensioning: Pretensioning of tendons for prestressed concrete may be accomplished either by single strand tensioning method or multiple-strand tensioning method. Comply with PCI MNL-116 requirements.

I. Concrete Placement: Place concrete in a continuous operation to prevent formation of seams or planes of weakness in precast units, complying with requirements of ACI 304. Thoroughly consolidate placed concrete by internal and external vibration without dislocation or damage to reinforcement and built-in items.

J. Identification: Provide permanent markings to identify pick-up points and orientation in structure, complying with markings indicated on final shop drawings. Imprint date of casting on each precast unit on a surface which will not show in finished structure.

K. Concrete Curing: Curing by low-pressure steam, steam vapor, radiant heat and moisture, or other similar process may be employed to accelerate concrete hardening and to reduce curing time.

D. Powder-Actuated Fasteners: Powder-actuated fasteners are not permitted for surface attachment of accessory items in precast, prestressed unit, unless otherwise accepted by precast manufacturer.

E. Installation Tolerances: Install precast units without exceeding following tolerance limits:

1. Variations from Level or Elevation: 1/4" in any 20' run; 1/2" in any 40' run; total plus or minus 1/2" at any location.

2. Variation from Position in Plan: Plus or minus 1/2" maximum at any location.

3. Offsets in alignment of Adjacent Members at Any Joint: 1/16" in any 10' run; 1/4" maximum.

F. Shoring of Steel Construction: Contractor shall provide all shoring necessary to erect precast plank on steel supporting structure. Contractor shall employ the services of a Specialty Engineer Registered in the State of Maine to design such shoring. Shoring design shall account for all construction loads, unbalanced loading, torsional loading and temporary lateral effects on the steel frame and precast concrete elements. The design shall account for all loadings until such time that the construction is completed.

G. Grouting Connections and Joints: After precast concrete units have been placed and secured, grout open spaces at connection and joints as follows:

1. Provide forms or other acceptable method to retain grout in place until sufficiently hard to support itself. For Girder Slab construction, break out cores and dam per the manufacturer's recommendations.

2. Provide reinforcement in joint were indicated.

3. Pack spaces with stiff grout material consolidating until voids are completely filled.

4. Place grout to finish smooth, plumb, and level with adjacent concrete surfaces.

5. Keep grouted joints damp for not less than 7 days after initial set.

6. Promptly remove grout material from exposed surfaces before it hardens.

7. Grout shall attain the specified 28 day strength prior to application of topping and superimposed loads for the Girder Slab System.

3.02 PLANT QUALITY CONTROL EVALUATIONS DURING FABRICATION:

A. Fabricator Requirements:

1. Fabricator is responsible to provide testing to indicate compliance of plank materials and tensioning stresses with manufacturing requirements. Any

c. Test cores in an air-dry condition per ACI 318 if concrete will be dry during use of completed structure.

d. Strength of concrete for each series of cores will be considered satisfactory if their average compressive strength is at least 85% of 28-day design compressive strength.

e. Test results will be made in writing on same day that test is made, with copies to Architect, Contractor, and precast manufacturer. Include in test reports the project identification name and number, date, name of precast concrete manufacturer, name of concrete testing service, identification letter, name, and type of member or members represented by core tests, design compressive strength compression breaking strength and type of break (corrected for length-diameter ratio), direction of applied load to core with respect to horizontal plan of concrete as placed, and moisture condition of core at time of bearing.

10. Patching: Where core test results are satisfactory and precast units are acceptable for use in work, fill core holes solid with patching mortar, and finish to match adjacent concrete surfaces.

11. Defective Work: Precast concrete units which do not conform to specified requirements, including strength, tolerance, and finishes, shall be replaced with precast concrete units that meet requirements of this section. Contractor shall also be responsible for cost of corrections to other work affected by or resulting from corrections to precast concrete work.

3.03 FIELD QUALITY CONTROL TESTING DURING CONSTRUCTION:

A. Testing Agency/Project Special Inspector shall verify reinforcement, including joint and slab reinforcement (WWF or reinforcing bar). Agent shall verify WWF or reinforcement has been chair/placed with proper clearances.

B. The Owner shall employ a Testing Laboratory to inspect, sample and test the materials and the production of grout and to submit test reports. Testing shall be performed by technicians certified by the Maine Concrete Technician Certification Board and/or ACI Concrete Field Testing Technician Grade I.

C. Grout shall be sampled and tested for quality control during placement. Quality control testing shall include the following, unless otherwise directed by the Architect.

D. See Submittals section for report requirements.

E. Sample fresh Grout: ASTM C-172, except modified slump to comply with ASTM C-94

F. Slump: ASTM C-143: One test for each grout load at point of discharge and one test for each set of compressive strength specimens.

G. Air Content: ASTM C-173: volumetric method or ASTM C-231 pressure method, one for each set of compressive strength specimens.

SECTION 03450

ARCHITECTURAL PRECAST CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General Conditions, Supplementary Conditions and Division 1 - General Requirements apply to Work of this Section.

1.2 SUMMARY

A. Section Includes: Provide plant-precast architectural concrete Work shown and specified. (Specifier may wish to describe units) (Specifier may wish to delineate structural design services; miscellaneous materials, i.e. anchorage and connection devices; testing services; and similar items required of this supplier).

B. Substitutions: Submit in accordance with requirements of Section 01630.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO).

B. American Concrete Institute (ACI).

1. ACI 318 - "Building Code Requirements for Reinforced Concrete."
2. ACI 533 - "Guide for Precast Concrete Wall Panels."

C. Architectural Precast Association (APA).

D. American Society for Testing and Materials (ASTM).

1. A 36 - "Specification for Carbon Structural Steel."
2. A 47 - "Specification for Ferritic Malleable Iron Castings."
3. A 123 - "Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."
4. A 153 - "Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware."
5. A 185 - "Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement."
6. A 283 - "Specification for Low and Intermediate Tensile Strength Carbon Steel Plates."
7. A 307 - "Specification for Carbon Steel Bolts and Studs 60,000 PSI Tensile Strength."
8. A 325 - "Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength."

G. Concrete Reinforcing Steel Institute (CRSI).

1. "Manual of Standard Practice."

H. Department of Defense (DOD).

I. Precast/Prestressed Concrete Institute (PCI).

1. MNL 117 - "Manual for Quality Control."

2. MNL 120 - "Design Handbook."

J. Steel Structures Painting Council (SSPC).

1. "Painting Manual."

K. American Institute of Steel Construction (AISC)

1. "Manual of Steel Construction

1.4 SYSTEM DESCRIPTION

A. Performance Requirements: Comply with Uniform Building Code, (UBC), municipal building codes, regulations of other governing agencies having jurisdiction and as follows: (Some or all of the following performance requirements may apply, depending on the type and use of precast units and the nature of the structure.)

1. (Wind Loads)

2. (Seismic forces).

3. (Building dynamics {thermal, live, impact or concentrated loads, structural deflection, story drift}).

1.5 SUBMITTALS

A. Product Data: (May include color pigments, admixtures, steel primer and galvanized touch-up material).

B. Shop Drawings

1. Show in-place location, fabrication details, plans, elevations, anchorages, reinforcement, connection details and methods, dimensions, finishes, relationships to adjacent materials, and erection and placement.

2. Show identification marks, coordinated to Shop Drawings, and date of manufacture on all units to facilitate hauling and erection.

3. Setting diagrams, templates, instructions and directions as required for installation.

C. Engineering Calculations (If required): Engineering calculations sealed by an engineer licensed to practice in (project state)

2. Obtain Architect's approval of initial production units of each type listed.(List unit types requiring approval).

3. Supply initial production units for job site assembly with other materials, for approval, as noted in this Section and in Division 1.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver units to the Project site in such quantities and at such times to ensure continuity of installation.

B. Avoid job site storage. When job site storage is required store in a manner to prevent physical damage and so that markings are visible.

C. Lift and support only at designated lifting or supporting points as shown on reviewed Shop Drawings.

D. Provide anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions as required for installation.

1.8 PROJECT CONDITIONS PROJECT CONDITIONS

A. Field Dimensions: General Contractor to furnish field measurements, if required, to precast fabricator.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approved Fabricators:

1. Fabricators not listed as approved shall request approval, as specified in Section 01630.

2.2 MATERIALS

A. Concrete Materials:

1. Portland Cement: ASTM C 150, Type I or III, white or gray colors to achieve desired finish colors. Use only one brand, type, and color from the same mill. Gray cement maybe used for non-exposed backup mixes.

2. Aggregates: ASTM C 33, gradation may differ to achieve desired finish characteristics. Select coarse and fine aggregate colors and screen sizes to match approved sample(s). Verify that adequate supply, from one pitor quarry, for each type of aggregate is available for the entire Project. If possible obtain entire aggregate supply prior to starting Work, or have aggregate supply held in reserve by aggregate supplier.

3. (Lightweight aggregate: ASTM C 330).

9. (Stainless Steel Plate: ASTM F 593, Type 304 or Type 316; bolts and studs, nuts and washers).

10. Finish for Steel Connection Materials:

a. Hot-dip galvanize (ASTM A 123 or A 153) steel exposed to weather in final assembly.

b. Shop Prime Remaining Steel Shapes: SSPC-Paint 25.

c. Anchor Bolts, Nuts, Washers, Cadmium Plated: ASTM A 563, Grade C.

d. Hot-dip galvanize (ASTM A 153) setting bolts or projecting steel in masonry applications.

e. Galvanizing Repair Paint: DOD-P-21035A or SSPC-Paint 20.

f. Welding Electrodes: Comply with AWS Standards.

E. (Bearing Pads: Elastomeric pads, AASHTO M251; ASTM D 412).

F. Grout Materials:

1. Cement Grout: Cement ASTM C 150; sand ASTM C 404; proportions 1:2.5 by volume, minimum water for placement and hydration.

2. Non-Shrink Grout: ASTM C 1107.

3. Epoxy Grout: Consult suppliers.

2.3 MIXES

A. Design mixes for each type of concrete specified may be prepared by an independent testing agency or by b architectural precast manufacturing plant personnel at precast fabricator's option.

B. Proportion mixes by either testing agency trial batch or field test data methods in accordance with ACI 211.1, using materials to be used on the Project, to provide normal weight concrete with properties as follows:

1. Compressive Strength: 5,000 psi (or other strength requirement) when tested in accordance with ASTM C 39.

2. Maximum water cement ratio 0.40 at point of placement.

3. Add air-entrainment admixture to result in air content at point of placement complying with ACI 533 requirements.

4. List other admixtures and recommended quantities.

5. Water absorption maximum 6% (by weight) when tested in accordance with ASTM C 642.

6. (List ingredients of Architect's approved sample mix(es) when appropriate).

C. Follow procedures similar to paragraph 2.3.B for lightweight concrete mixes.

C. (Non-certified producers shall furnish and pay for reports by an independent Testing Laboratory, approved by the Owner as specified in paragraph 2.6.D).

D. (The Owner may retain an independent Testing Laboratory to evaluate fabricator's quality control and testing methods. Testing Laboratory shall be certified by CCRL or similar National authority. Fabricator shall allow Testing Laboratory access to all operations pertinent to the Project).

E. Defective Work: Discard units that do not conform to requirements as shown or specified. Replace with units which meet requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field Dimensions: Furnish field dimensions to fabricator as required.

B. Examine substrates and conditions for compliance with requirements for installation, tolerances, true and level bearing surfaces, and other conditions affecting performance of architectural precast concrete units. Do not proceed with installation until unsatisfactory conditions have been corrected.

C. Do not install units until supporting structure has been completed (has attained minimum allowable design compressive strength).

3.2 ERECTION

A. Erection shall be by persons experienced and trained in placement and securing of architectural precast concrete units.

B. Erect level, plumb, and true to line. Do not allow cumulative dimensional errors to develop. Adjustments such as shimming which would place additional stress on units will not be permitted. Adhere to dimensional tolerances in accordance with PCI recommendations. Erect and secure in a manner to prevent damage to units or units in place. Replace any damaged units.

C. Lift and handle precast using lift points and embeds as shown on precast shop drawings.

D. Erection Tolerances:

1. Erect within tolerances listed in ACI-533.

2. Erect to conform with structure tolerances listed in ACI-533.

3. Where two stage joint seal is required, sequence with sealant applicator to ensure that sealant, gaskets, and similar items required for interior side seal are installed concurrently with installation of precast units.

E. Joint Sealants: As specified in Section 07900.

3.3 REPAIR

SECTION 03540

GYPSUM CEMENTITIOUS UNDERLAYMENT

SPECIFICATION FOR GYP-CRETE 2000© FLOOR UNDERLAYMENT OVER ACOUSTI-MAT© II SOUND DEADENING PAD

PART 1 GENERAL

1.01 SUMMARY

A. Work of this section includes installation of gypsum cementitious underlayment over sound deadening pad. This specification for Gyp-Crete 2000 Floor Underlayment over Acousti-Mat II sound deadening pad is based on products of Maxxon Corporation, Hamel, MN. Products of other manufacturers may be considered, subject to compliance with requirements as judged solely by Architect.

1.02 SECTION INCLUDES

A. Gyp-Crete 2000 gypsum cement

B. Acousti-Mat II

C. Maxxon Floor Primer

D. Maxxon Overspray

1.03 QUALITY ASSURANCE

A. Gyp-Crete 2000 Installer's Qualifications: Installation of Gyp-Crete 2000 shall be by an applicator authorized by the Maxxon Corporation using Maxxon approved mixing and pumping equipment.

B. Acousti-Mat II Installer's Qualifications: Installation of Acousti-Mat II shall be by an applicator authorized by the Maxxon Corporation.

1.04 DELIVERY, STORAGE AND HANDLING

A. General Requirements: Materials shall be delivered in their original, unopened packages, and protected from exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.

1.05 SITE CONDITIONS

A. Environmental Requirements: Before, during and after installation of Gyp-Crete 2000 and Acousti-Mat II, building interior shall be enclosed and maintained at a temperature above 50 degrees F (10 degrees C).

PART 2 PRODUCTS

B. Priming Acousti-Mat II: Prime Acousti-Mat II using the Maxxon Floor Primer to bond the Gyp-Crete 2000 to the mat.

C. Application: Place Gyp-Crete 2000 a minimum 1 inch (25 mm) thick, over loosely laid Acousti-Mat II. Spread and screed Gyp-Crete 2000 to a smooth surface.

D. Drying: General Contractor shall provide continuous ventilation and adequate heat to rapidly remove moisture from the area until the Gyp-Crete 2000 is dry. General Contractor shall provide mechanical ventilation if necessary. Under the above conditions, for 1 inch thick Gyp-Crete 2000, 7-10 days is usually adequate drying time. To test for dryness, tape a 24 inch by 24 inch (609 mm by 609 mm) section of plastic or high density rubber mat to the surface of the underlayment. After 48-72 hours, if no condensation occurs, the underlayment shall be considered dry. Perform dryness test 5-7 days after pour.

3.04 PREPARATION FOR INSTALLATION OF GLUE DOWN FLOOR GOODS

A. Sealing: Seal all areas that receive glue down floor goods with Maxxon Overspray according to the Maxxon Corporation's specifications. Any floor areas where the surface has been damaged shall be cleaned and sealed regardless of floor covering to be used. Where floor goods manufacturers require special adhesive or installation systems, their requirements supersede these recommendations.

B. Floor Goods Procedures: See the Maxxon Corporation's "Procedures for Attaching Finished Floor Goods to Maxxon Underlayments" brochure for guidelines for installing finished floor goods. This procedure is not a warranty and is to be used as a guideline only.

3.05 FIELD QUALITY CONTROL

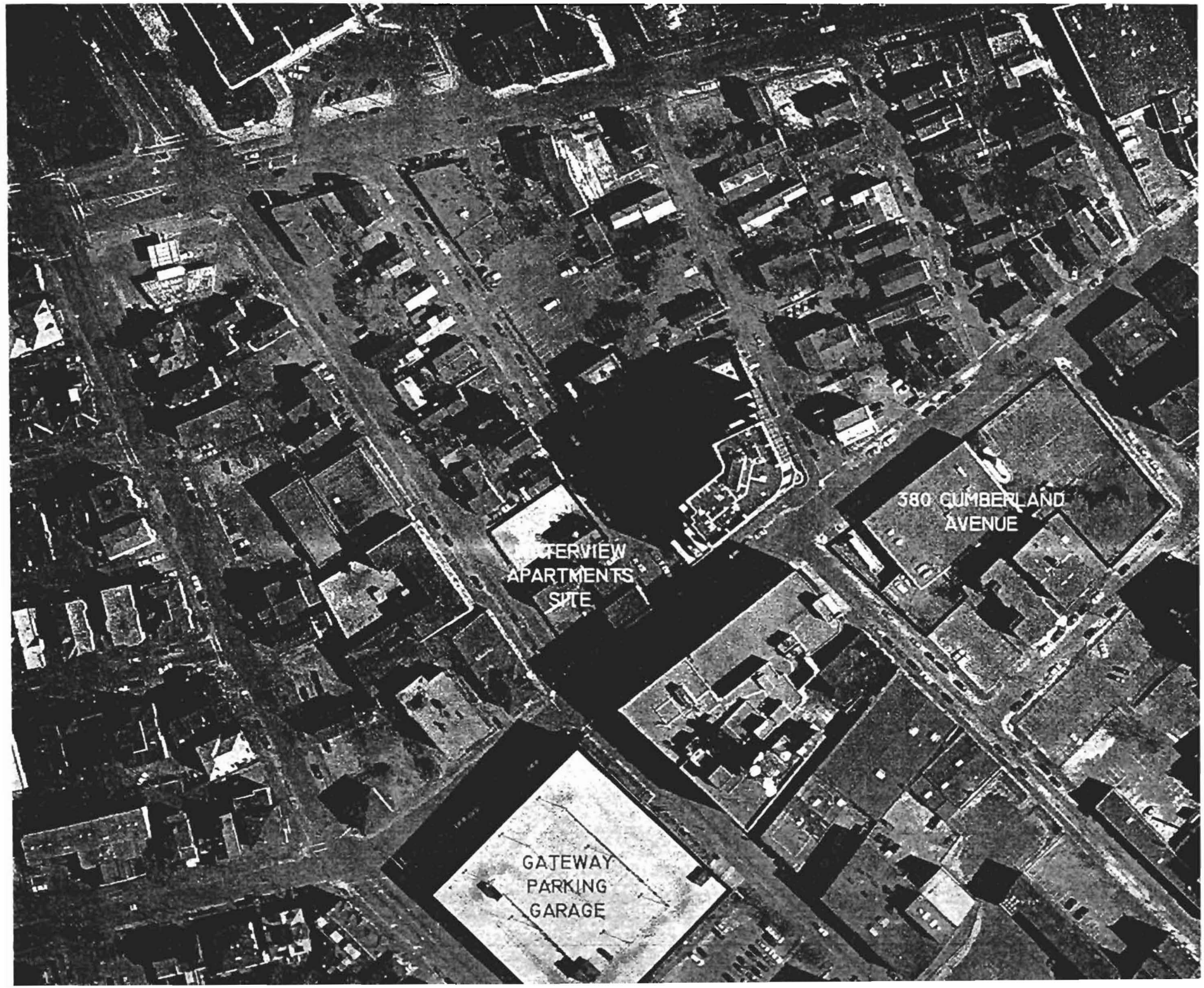
A. Slump Test: Gyp-Crete 2000 mix shall be tested for slump as it's being pumped using a 2 inch by 4 inch (50 mm by 101 mm) cylinder resulting in a patty size of 8 inches (203 mm) plus or minus 1 inch (25 mm) diameter.

B. Field Samples: At least one set of 3 molded cube samples shall be taken from each day's pour during the Gyp-Crete 2000 application. Cubes shall be tested as recommended by the Maxxon Corporation in accordance with modified ASTM C 472. Test results shall be available to architect and/or contractor upon request from applicator.

3.06 PROTECTION

A. Protection From Heavy Loads: During construction, place temporary wood planking over Gyp-Crete 2000 wherever it will be subject to heavy wheeled or concentrated loads.

...END OF SECTION 03450


380 CUMBERLAND AVENUE
APARTMENTS SITE
GATEWAY PARKING GARAGE

PROJECT TEAM:

BUILDING OWNER:

WATERVIEW DEVELOPMENT, LLC

477 CONGRESS STREET
PORTLAND, MAINE 04101
TEL: (207) 773-3477

ARCHITECT:

CWS Architects

434 Cumberland Avenue
Portland, ME 04101
Phone: (207) 774-4441
Fax: (207) 774-4016
www.CWSarch.com

GENERAL CONTRACTOR:

ALLIED/COOK CONSTRUCTION
Planners * Managers * Design/Builders
Building Excellence Since 1958
P.O. Box 1396, Portland, Maine 04005
(207) 772-2888 * Fax (207) 885-5135

SITE/CIVIL ENGINEERING:

MITCHELL ASSOCIATES
Landscape Architects
The Staples School
70 Center Street
Portland, Maine 04101
(207) 774-4427

STRUCTURAL ENGINEERING:

BECKER
structural engineers, inc
75 York Street Portland, ME 04101-4550
Tel: 207.879.1838 Fax: 207.879.1822

MECHANICAL/ELECTRICAL ENGINEERS:

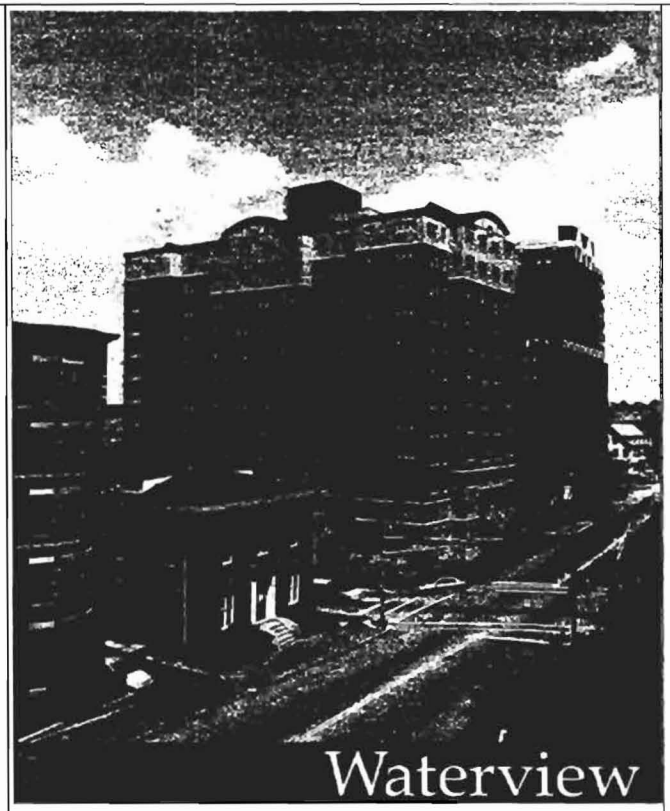
BENNETT ENGINEERING
CONSULTING ENGINEERS
Bennett Road, P.O. Box 297, Freeport, Maine 04032
Tel - (207) 865-9475
Fax - (207) 865-1800
Email - office@bennettengineering.net

ELECTRICAL CONTRACTOR:

B·H·MILLIKEN
Electrical Contractors

ABBREVIATIONS:

A/C	AIR CONDITIONING
ABV	ABOVE
AC	PLAS ACOUSTICAL PLASTER
ACT	ACOUSTIC CEILING TILE
ADD	ADDENDA, ADDENDUM
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
BCE	BOTTOM CHORD EXTENSION
BD	BOARD
BLP	BORROWED LIGHT PANEL
BO	BOTTOM OF
BOF	BOTTOM OF FOOTING
BOS	BOTTOM OF STEEL
BS	BOTH SIDES
BSE	BRICK SHELF ELEVATION
C	CHANNEL
CPT	CARPET
CB	CATCH BASIN; CHALKBOARD
CFM	CUBIC FEET PER MINUTE
CJ	CONTROL JOINT; CONSTRUCTION
℄	JOINT CENTERLINE
CMU	CONCRETE MASONRY UNIT
CT	CERAMIC TILE
CUH	CABINET UNIT HEATER
DF	DRINKING FOUNTAIN
DR	DOOR
DW	DISHWASHER
EF	EXHAUST FAN; EACH FACE
EJ	EXPANSION JOINT
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EX	EXISTING
EXG	EXISTING
EXIST	EXISTING
EXT	EXTERIOR
EXTR	EXTERIOR
FB	FLAT BAR
FBO	FURNISHED BY OTHERS
FCO	FLOOR CLEAN-OUT
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR; FAR FACE
FIN	FINISH(ED)
FIXT	FIXTURE
FL	FLOOR
FO	FRAMED OPENING
FOF	FACE OF FINISH
FS	FAR SIDE
GA	GAGE, GAUGE
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GDT	GYPSUM DROP-IN TILE
GL	GLASS
GWB	GYPSUM WALL BOARD
H/C	HANDICAPPED; HOLLOW CORE
HDO	HIGH DENSITY OVERLAY
HM	HOLLOW METAL
HOR	HORIZONTAL
HRU	HEAT RECOVERY UNIT
H&V	HEATING AND VENTILATING
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWH	HOT WATER HEATER
ID	INSIDE DIAMETER
IF	INSIDE FACE
IJ	ISOLATION JOINT
INT	INTERIOR
INTR	INTERIOR
INV	INVERT
JNT	JOINT
L	ANGLE
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LIGHTING PANEL
MDO	MEDIUM DENSITY OVERLAY
MO	MASONRY OPENING
MR	MOISTURE-RESISTANT
MUA	MAKE-UP AIR
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OF	OUTSIDE FACE; OWNER FURNISHED
OFIC	OWNER FURNISHED AND INSTALLED BY CONTRACTOR
OH	OVERHEAD
OPG	OPENING
OPNG	OPENING
OPP	OPPOSITE
PA	PUBLIC ADDRESS
PAF	POWDER-ACTUATED FASTENER
℗	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PP	POWER PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PTD	PAINTED, PAPER TOWEL DISPENSER
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
R	RISER; RADIUS
RB	RUBBER BASE
REF	REFRIGERATOR
REFR	REFRIGERATOR
REFRIG	REFRIGERATOR
RD	ROOF DRAIN
RM	ROOM
RO	ROUGH OPENING
RP	REMOVABLE PANEL
RR	RUB-RAIL
SC	SOLID CORE
SF	SQUARE FOOT; SUPPLY FAN
SK	SHEAR KEY
SIM	SIMILAR
SS	STAINLESS STEEL
ST	STEEL
STL	STEEL
STD	STANDARD
STR	STRUCTURAL
STRUCT	STRUCTURAL
T	TREAD
T&B	TOP AND BOTTOM
TBM	TEMPORARY BENCHMARK
TCE	TOP CHORD EXTENSION



GENERAL NOTES PERTAINING TO THE CONSTRUCTION AND CONSTRUCTION DOCUMENTATION:

1. THE CONTRACTOR SHALL REVIEW AND DIRECT ALL SUBCONTRACTORS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS TO ASCERTAIN THE SCOPE OF WORK FOR EACH TRADE PRIOR TO BID. ALL CONTRACTORS SHALL BE RESPONSIBLE FOR ALL DRAWINGS AND SPECIFICATIONS.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH FEDERAL, STATE, CITY AND LOCAL BUILDING CODES AND THEIR REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS AS REQUIRED BY THE LOCAL JURISDICTIONAL AUTHORITIES FOR THIS JOB.

4. BEFORE COMMENCING WORK, THE

SYMBOLS LEGEND:

XX / XXX — SECTION

XX / XXX — DETAIL

ELEVATION LEVEL

2 — REVISION

A — WINDOW TYPE

100A — DOOR NUMBER

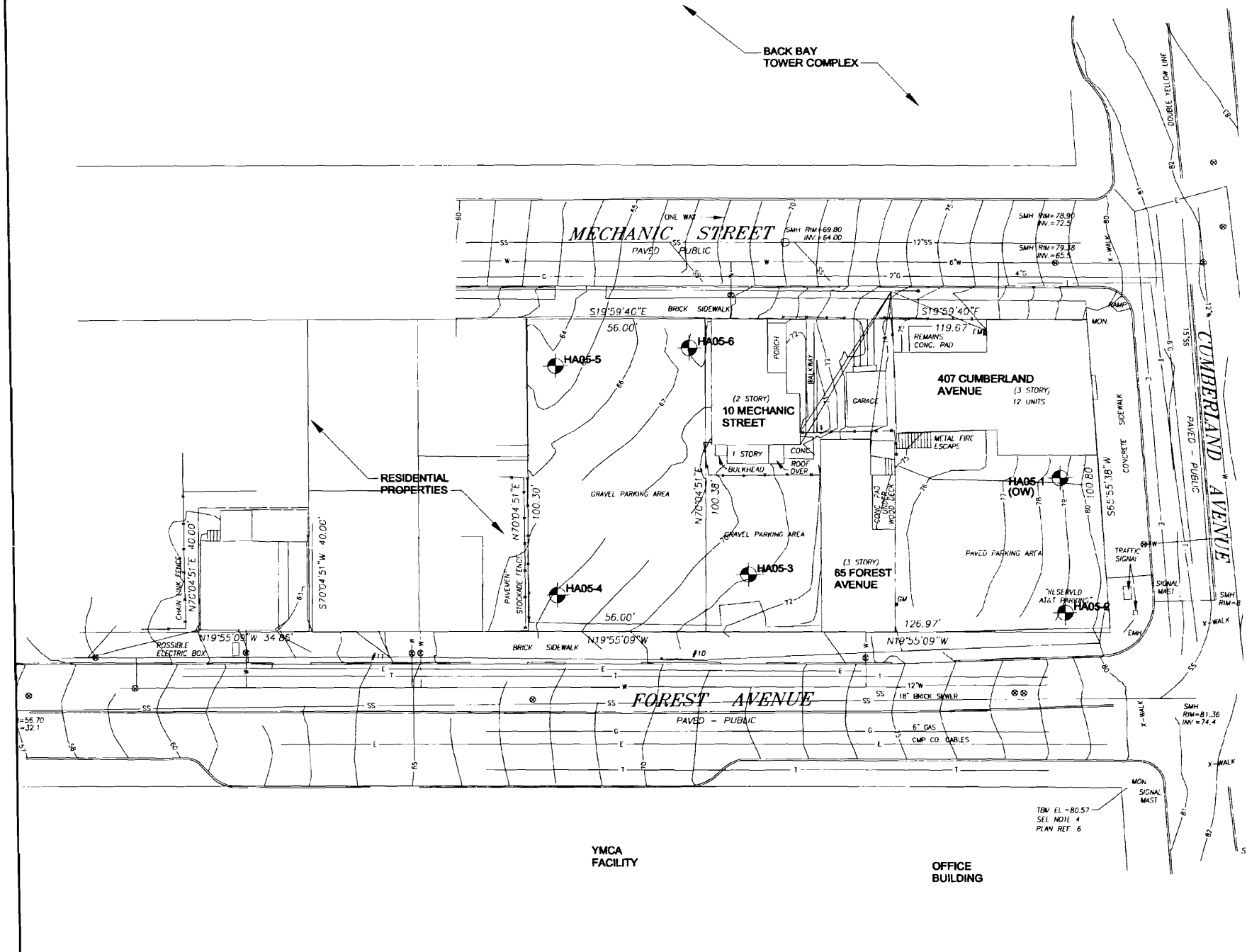
CONFERENCE ROOM — ROOM NAME

100 — ROOM NUMBER

A / A / A6.1 / D / B / C — INTERIOR ELEVATION

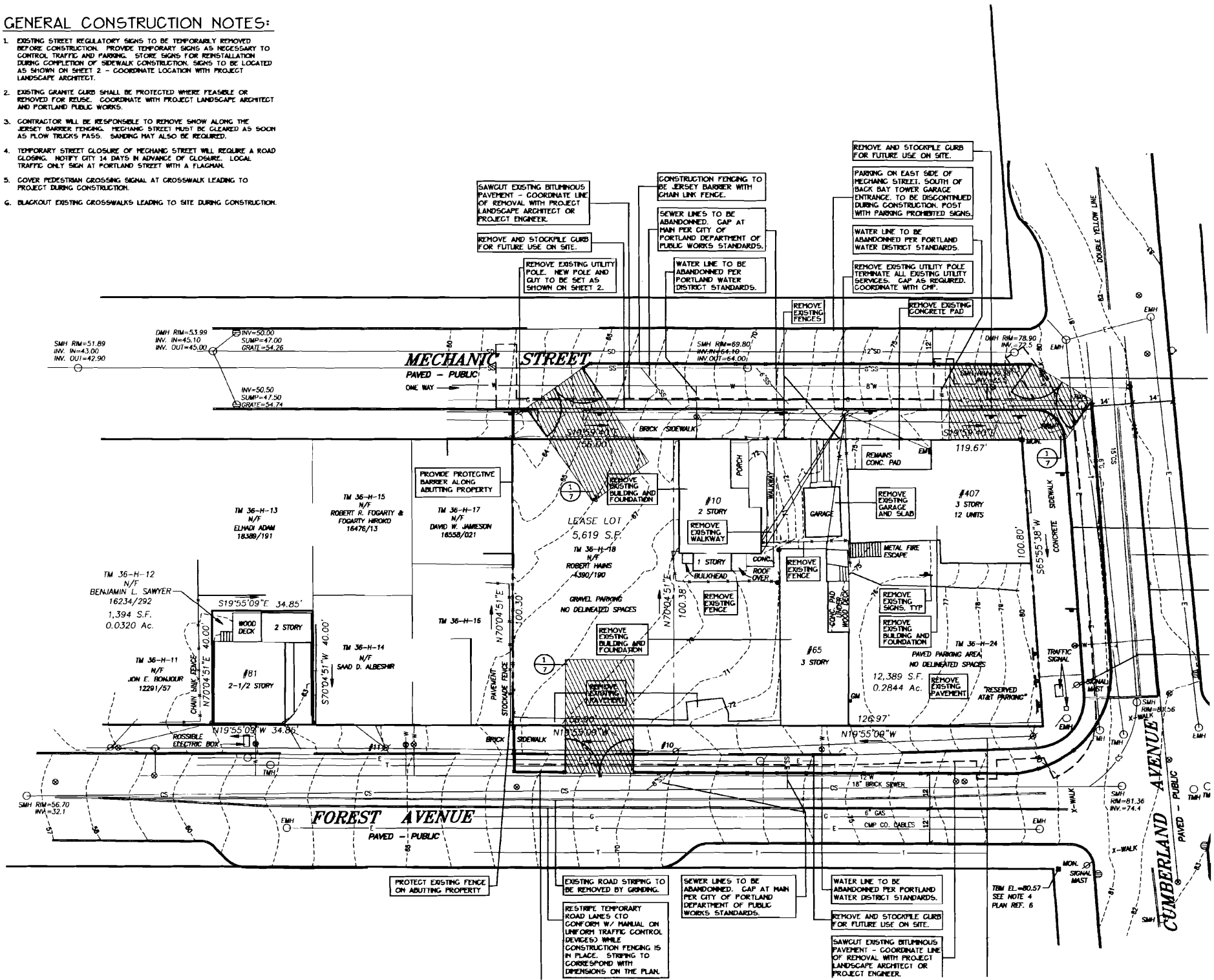
DRAWING STATUS LIST

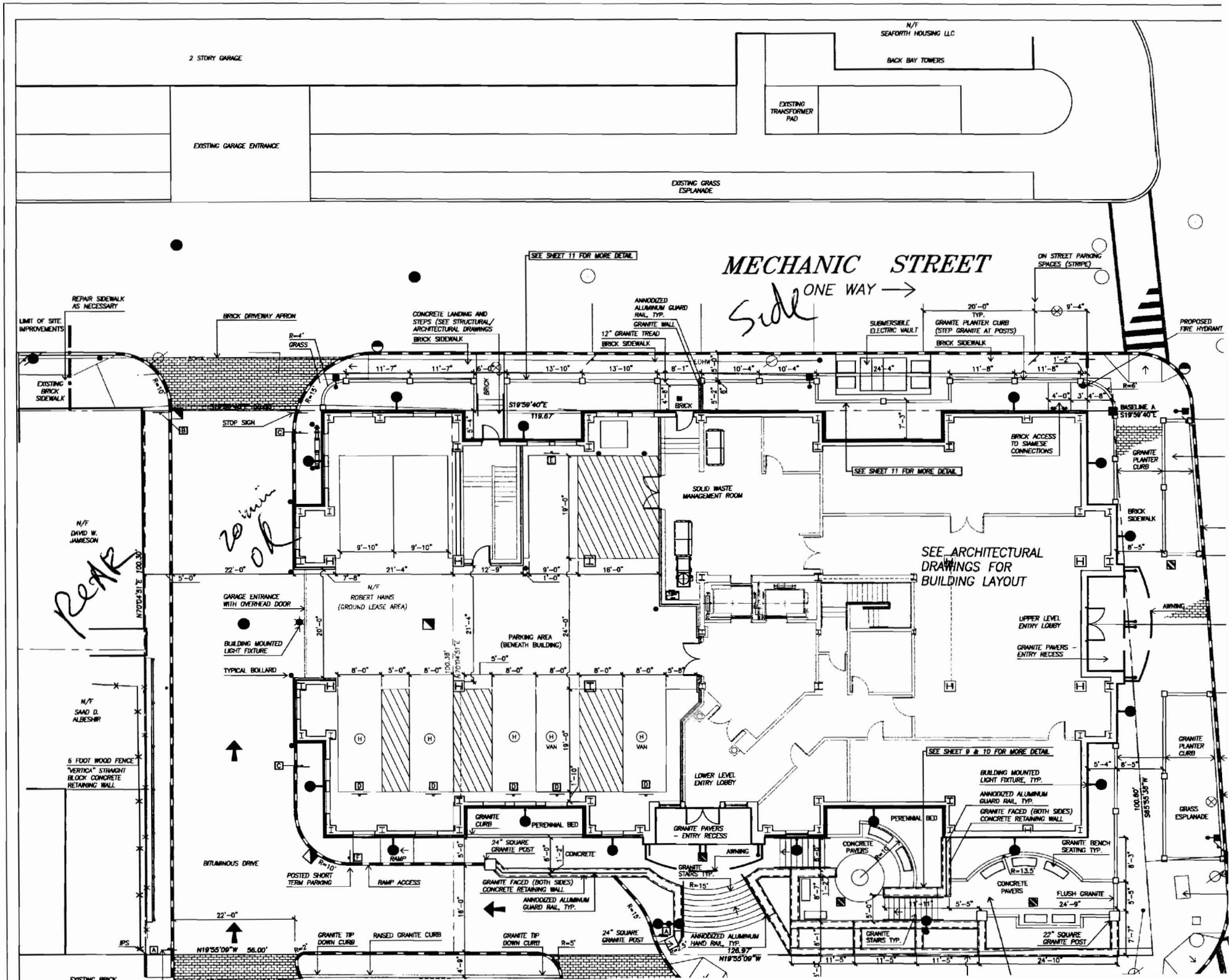
DWG NO.	DRAWING NAME	PRELIMINARY PROGRESS SET 03/29/05	ISSUED FOR PROGRESS DESIGN PACKAGE 04/29/05	ISSUED FOR DESIGN DEVELOPMENT DOCUMENTS 08/03/05	ISSUED FOR FOUNDATION PERMITTING & PRICING" 07/15/05
	SHEET REFERENCE				
A0	TITLE PAGE	●	●	●	●
	GEOTECHNICAL DRAWINGS				
FIGURE 2	SITE & SUBSURFACE EXPLORATION LOCATION PLAN			●	●
	CIVIL DRAWINGS				
1	EXISTING CONDITIONS & DEMOLITION PLAN	●	●	●	●
2	LAYOUT & LIGHTING PLAN	●	●	●	●
3	GRADING, DRAINAGE & UTILITIES PLAN	●	●	●	●
4	COMMON AREA PLAN AND DETAILS	●	●	●	●
5	PLANTING PLAN	●	●	●	●
6	SITE DETAILS	●	○	○	○
7	SITE DETAILS	●	○	○	○
8	SITE DETAILS			○	○
9	SITE DETAILS				○
10	DETAIL ENLARGEMENT RETAINING WALLS				○
11	DETAIL ENLARGEMENT PLANTER WALLS				○
12	EROSION AND SEDIMENTATION CONTROL PLAN	●	●	●	○
	STRUCTURAL DRAWINGS				
S0.1	GENERAL NOTES		○	○	○
S1.1	FOUNDATION PLAN	●	○	○	○
S1.2	FIRST FLOOR FRAMING PLAN		○	○	○
S1.3	2ND FLOOR FRAMING PLAN		○	○	○
S1.4	3RD FLOOR THRU 12TH FRAMING PLAN	●	○	○	○
S1.5	MAIN ROOF FRAMING PLAN		○	○	○
S1.6	BRACED FRAME ELEVATIONS	●	○	○	○
S1.7	BRACED FRAME ELEVATIONS		○	○	○
S1.8	COLUMN SCHEDULE		○	○	○
S2.1	TYPICAL DETAILS		○	○	○
S2.2	CONCRETE SECTION & DETAILS		○	○	○
S2.3	CONCRETE SECTION & DETAILS		○	○	○
S2.4	CONCRETE SECTION & DETAILS			○	○
S2.5	CONCRETE SECTION & DETAILS				○
S3.1	FRAMING SECTION & DETAILS		○	○	○
S3.2	FRAMING SECTION & DETAILS		○	○	○
S3.3	FRAMING SECTION & DETAILS		○	○	○
S3.4	BRACED FRAME DETAILS		○	○	○
S3.5	TYPICAL FRAMING DETAILS	●	○	○	○
S4.1	TRUSS ELEVATIONS		○	○	○
	ARCHITECTURAL DRAWINGS				
A0.1	PARTITION SCHEDULE, NOTES & MISC.		○	○	○
A1.B	FLOOR PLAN BASEMENT	●	○	○	○
A1.1	FLOOR PLAN FIRST FLOOR	●	○	○	○

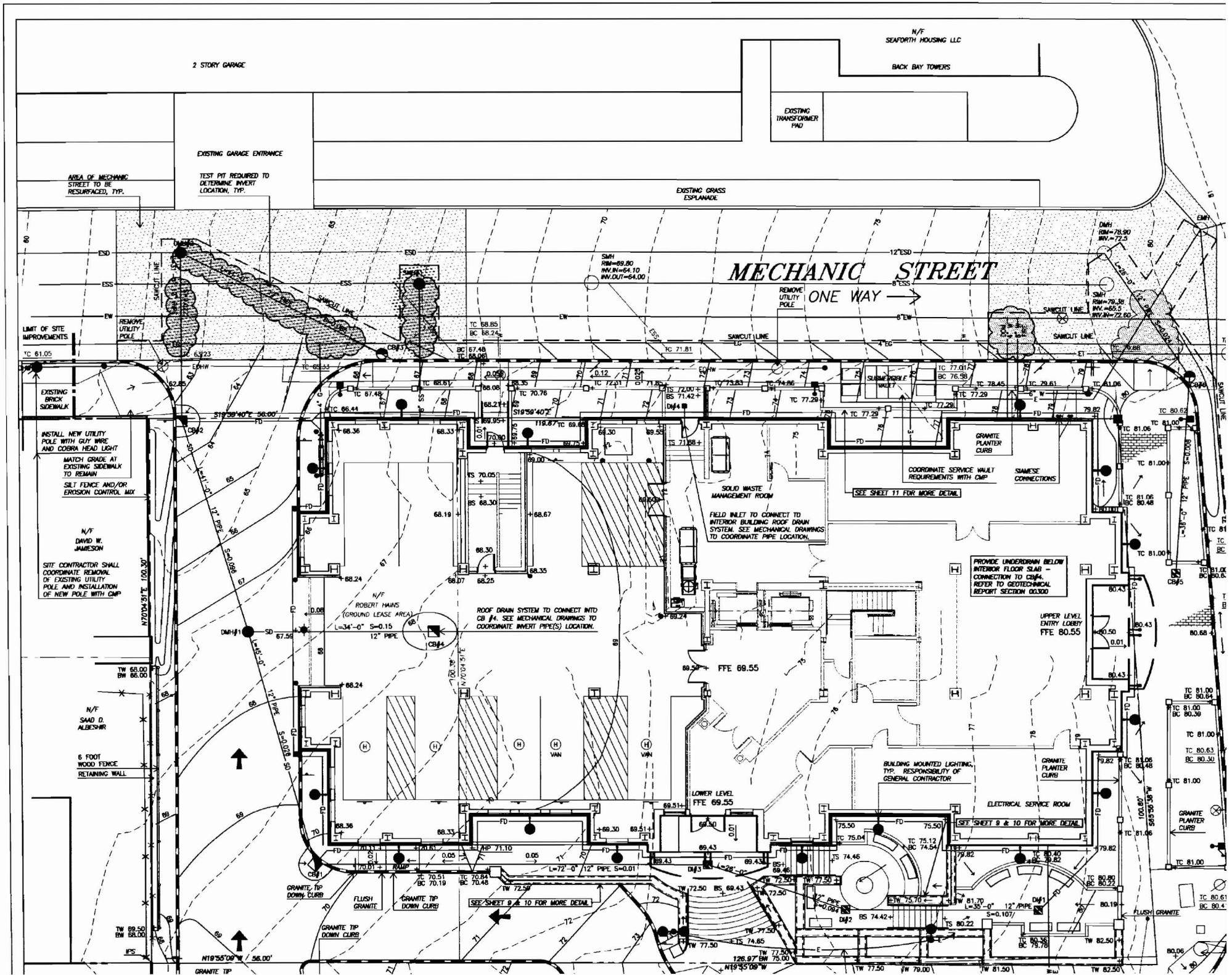

BACK BAY
TOWER COMPLEX
MECHANIC STREET
PAVED PUBLIC
ONE WAY
SMH RIM=69.80
INV.=64.00
SMH RIM=78.90
INV.=72.5
SMH RIM=79.38
INV.=65.5
12"SS
6"W
4"G
2"G
BRICK SIDEWALK
S19°59'40"E
56.00'
S19°59'40"E
119.67'
EMH
REMAINS
CONC. PAD
RAMP
MON.
HA05-5
HA05-6
PORCH
WALKWAY
(2 STORY)
10 MECHANIC
STREET
GARAGE
407 CUMBERLAND
AVENUE
(3 STORY)
12 UNITS
METAL FIRE
ESCAPE
1 STORY
CONC.
ROOF
OVER
BULKHEAD
CONC. PAD
WOOD DECK
HA05-1
(OW)
S65°55'18"W
100.80'
CONCRETE
SIDEWALK
CUMBERLAND AVENUE
PAVED - PUBLIC
RESIDENTIAL
PROPERTIES
GRAVEL PARKING AREA
N70°04'51"E
100.30'
N70°04'51"E
100.38'
S70°04'51"W 40.00'
N70°04'51"E 40.00'
CHAIN LINK FENCE
PALEWIN
STOCKADE FENCE
HA05-4
HA05-3
(3 STORY)
65 FOREST
AVENUE
PAVED PARKING AREA
TRAFFIC
SIGNAL
SIGNAL
MAST
SMH
RIM=8
X-WALK
RESERVED
AT&T PARKING
HA05-2
GM
EMH
56.00'
126.97'
N19°55'09"W 34.86'
POSSIBLE
ELECTRIC BOX
N19°55'09"W
N19°55'09"W
BRICK SIDEWALK
FOREST AVENUE
PAVED - PUBLIC
12"W
18" BRICK SWLR
6" GAS
CMP CO. CABLES
SMH
RIM=81.36
INV.=74.4
MON.
SIGNAL
MAST
TBM EL.=80.57
SEE NOTE 4
PLAN REF. 6
YMCA
FACILITY
OFFICE
BUILDING

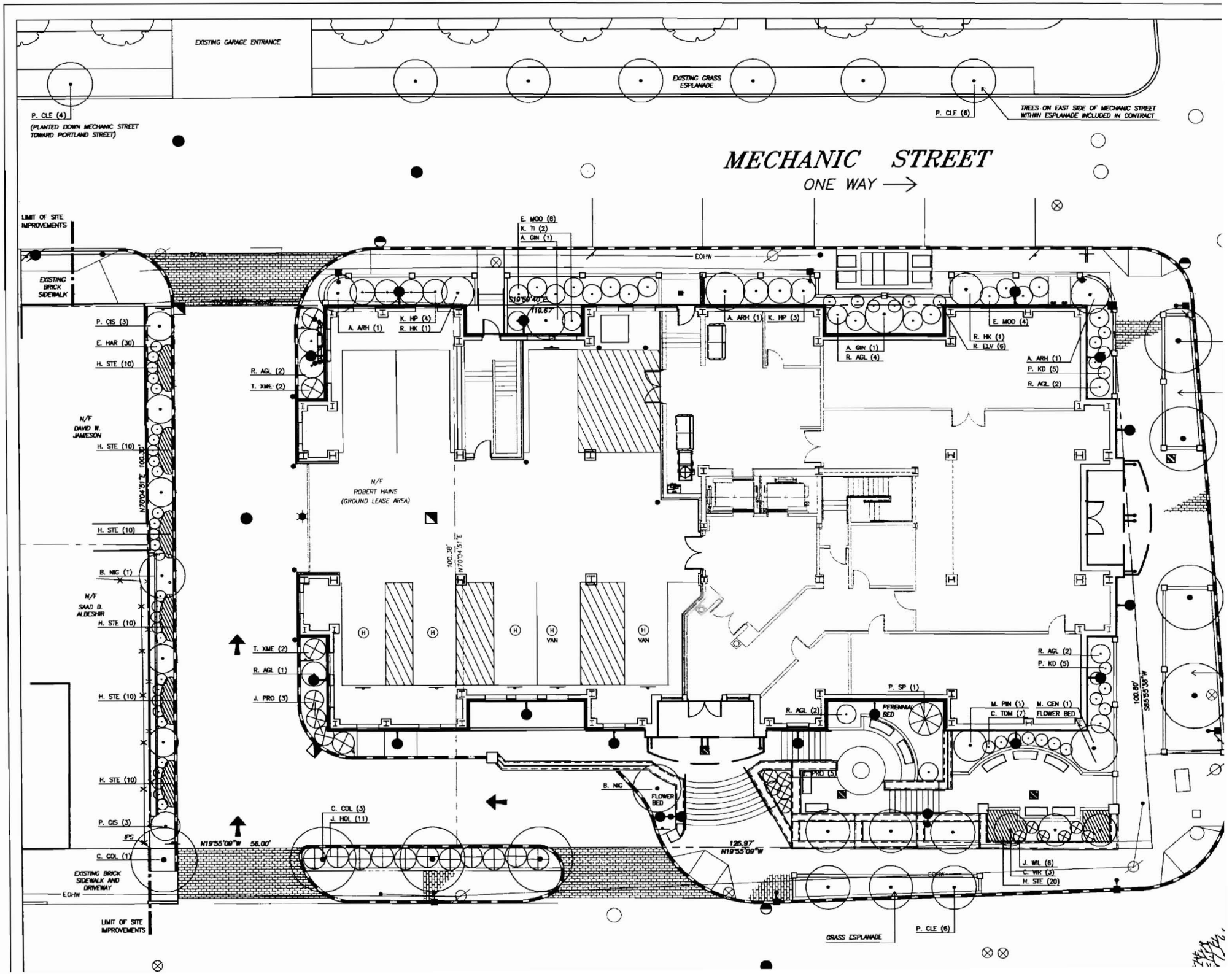
GENERAL CONSTRUCTION NOTES:

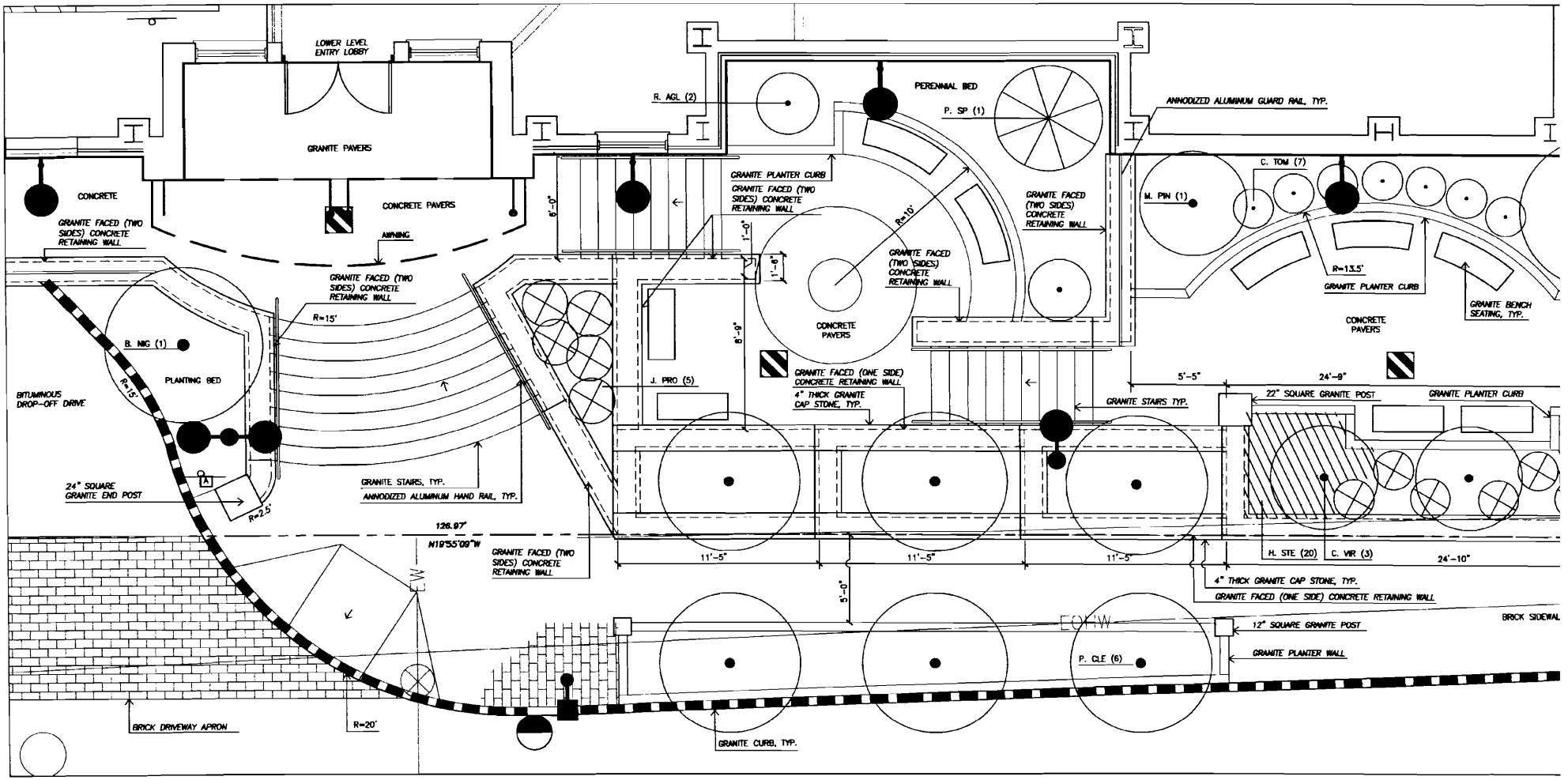
1. EXISTING STREET REGULATORY SIGNS TO BE TEMPORARILY REMOVED BEFORE CONSTRUCTION. PROVIDE TEMPORARY SIGNS AS NECESSARY TO CONTROL TRAFFIC AND PARKING. STORE SIGNS FOR REINSTALLATION DURING COMPLETION OF SIDEWALK CONSTRUCTION. SIGNS TO BE LOCATED AS SHOWN ON SHEET 2 - COORDINATE LOCATION WITH PROJECT LANDSCAPE ARCHITECT.
2. EXISTING GRANITE CURB SHALL BE PROTECTED WHERE FEASIBLE OR REMOVED FOR REUSE. COORDINATE WITH PROJECT LANDSCAPE ARCHITECT AND PORTLAND PUBLIC WORKS.
3. CONTRACTOR WILL BE RESPONSIBLE TO REMOVE SNOW ALONG THE JERSEY BARRIER FENCING. MECHANIC STREET MUST BE CLEARED AS SOON AS PLOW TRUCKS PASS. SANDING MAY ALSO BE REQUIRED.
4. TEMPORARY STREET CLOSURE OF MECHANIC STREET WILL REQUIRE A ROAD CLOSING. NOTIFY CITY 14 DAYS IN ADVANCE OF CLOSURE. LOCAL TRAFFIC ONLY SIGN AT PORTLAND STREET WITH A FLAGMAN.
5. COVER PEDESTRIAN CROSSING SIGNAL AT CROSSWALK LEADING TO PROJECT DURING CONSTRUCTION.
6. BLACKOUT EXISTING CROSSWALKS LEADING TO SITE DURING CONSTRUCTION.




N/F
SEAFORTH HOUSING LLC
BACK BAY TOWERS
2 STORY GARAGE
EXISTING TRANSFORMER PAD
EXISTING GARAGE ENTRANCE
EXISTING GRASS ESPLANADE
MECHANIC STREET
ONE WAY
Side
SEE SHEET 11 FOR MORE DETAIL
ON STREET PARKING SPACES (STRIPE)
REPAIR SIDEWALK AS NECESSARY
LIMIT OF SITE IMPROVEMENTS
BRICK DRIVEWAY APRON
CONCRETE LANDING AND STEPS (SEE STRUCTURAL/ ARCHITECTURAL DRAWINGS
ANNODIZED ALUMINUM GUARD RAIL, TYP.
GRANITE WALL
12" GRANITE TREAD
BRICK SIDEWALK
SUBMERSIBLE ELECTRIC VAULT
GRANITE PLANTER CURB (STEP GRANITE AT POSTS)
PROPOSED FIRE HYDRANT
EXISTING BRICK SIDEWALK
GRASS
STOP SIGN
S19°59'40"E
119.67'
BRICK ACCESS TO SIAMESE CONNECTIONS
BASELINE A
S19°59'40"E
SOLID WASTE MANAGEMENT ROOM
SEE ARCHITECTURAL DRAWINGS FOR BUILDING LAYOUT
N/F
DAVID W. JAMIESON
REAR
20' min OK
N70°04'51"E 100.38'
GARAGE ENTRANCE WITH OVERHEAD DOOR
N/F
ROBERT HAINS
(GROUND LEASE AREA)
BUILDING MOUNTED LIGHT FIXTURE
TYPICAL BOLLARD
PARKING AREA (BENEATH BUILDING)
UPPER LEVEL ENTRY LOBBY
GRANITE PAVERS - ENTRY RECESS
AWNING
N/F
SAAD D. ALBESHIR
6 FOOT WOOD FENCE
"VERTICA" STRAIGHT BLOCK CONCRETE RETAINING WALL
VAN
LOWER LEVEL ENTRY LOBBY
SEE SHEET 9 & 10 FOR MORE DETAIL
BUILDING MOUNTED LIGHT FIXTURE, TYP.
ANNODIZED ALUMINUM GUARD RAIL, TYP.
GRANITE FACED (BOTH SIDES) CONCRETE RETAINING WALL
GRANITE CURB
PERENNIAL BED
24" SQUARE GRANITE POST
CONCRETE
BITUMINOUS DRIVE
RAMP
POSTED SHORT TERM PARKING
RAMP ACCESS
GRANITE FACED (BOTH SIDES) CONCRETE RETAINING WALL
ANNODIZED ALUMINUM GUARD RAIL, TYP.
GRANITE STAIRS TYP.
CONCRETE PAVERS
GRANITE BENCH SEATING TYP.
FLUSH GRANITE
22" SQUARE GRANITE POST
GRANITE TIP DOWN CURB
RAISED GRANITE CURB
ANNODIZED ALUMINUM HAND RAIL, TYP.
N19°55'09"W 56.00'
N19°55'09"W 126.97'
S85°55'38"W 100.60'
GRASS ESPLANADE
GRANITE PLANTER CURB
BRICK SIDEWALK
AWNING

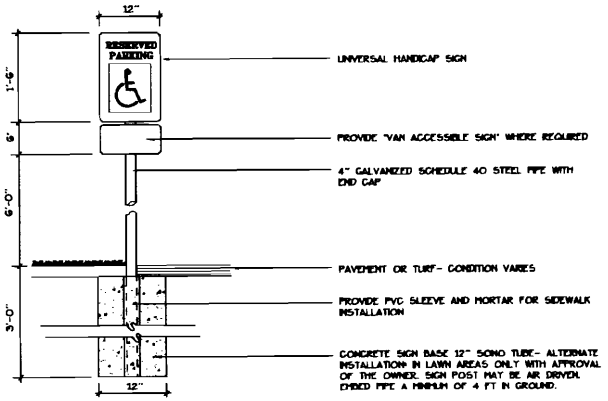

N/F
SEAFORTH HOUSING LLC
BACK BAY TOWERS
2 STORY GARAGE
EXISTING TRANSFORMER PAD
EXISTING GARAGE ENTRANCE
AREA OF MECHANIC STREET TO BE RESURFACED, TYP.
TEST PIT REQUIRED TO DETERMINE INVERT LOCATION, TYP.
EXISTING GRASS ESPLANADE
MECHANIC STREET
ONE WAY
LIMIT OF SITE IMPROVEMENTS
REMOVE UTILITY POLE
EXISTING BRICK SIDEWALK
INSTALL NEW UTILITY POLE WITH GUY WIRE AND COBRA HEAD LIGHT
MATCH GRADE AT EXISTING SIDEWALK TO REMAIN
SILT FENCE AND/OR EROSION CONTROL MIX
N/F DAVID W. JAMIESON
SITE CONTRACTOR SHALL COORDINATE REMOVAL OF EXISTING UTILITY POLE AND INSTALLATION OF NEW POLE WITH GMP
N/F ROBERT HAINS (GROUND LEASE AREA)
ROOF DRAIN SYSTEM TO CONNECT INTO CB #4. SEE MECHANICAL DRAWINGS TO COORDINATE INVERT PIPE(S) LOCATION.
N/F SAAD D. ALBESHIR
6 FOOT WOOD FENCE
RETAINING WALL
GRANITE TIP DOWN CURB
FLUSH GRANITE
RAMP
SEE SHEET 9 & 10 FOR MORE DETAIL
SOLID WASTE MANAGEMENT ROOM
FIELD INLET TO CONNECT TO INTERIOR BUILDING ROOF DRAIN SYSTEM. SEE MECHANICAL DRAWINGS TO COORDINATE PIPE LOCATION.
SEE SHEET 11 FOR MORE DETAIL
COORDINATE SERVICE VAULT REQUIREMENTS WITH GMP
SIAMESE CONNECTIONS
GRANITE PLANTER CURB
PROVIDE UNDERDRAIN BELOW INTERIOR FLOOR SLAB - CONNECTION TO CB#4. REFER TO GEOTECHNICAL REPORT SECTION 00300
UPPER LEVEL ENTRY LOBBY
FFE 80.55
LOWER LEVEL
FFE 69.55
BUILDING MOUNTED LIGHTING, TYP. RESPONSIBILITY OF GENERAL CONTRACTOR
ELECTRICAL SERVICE ROOM
SEE SHEET 9 & 10 FOR MORE DETAIL
SUBMERSIBLE VAULT
SMH RIM=69.80 INV.IN=64.10 INV.OUT=64.00
DMH RIM=78.90 INV.=72.5
SMH RIM=79.38 INV.=65.5 INV.IN=72.60
S19°59'40"E 56.00'
N7°04'51"E 100.30'
N19°55'09"W 56.00'
S45°55'38"W 100.80'
126.97' BW 75.00
TW 69.50 BW 68.00
TW 66.00 BW 66.00


EXISTING GARAGE ENTRANCE
EXISTING GRASS ESPLANADE
P. CLE (4)
(PLANTED DOWN MECHANIC STREET TOWARD PORTLAND STREET)
P. CLF (6)
TREES ON EAST SIDE OF MECHANIC STREET WITHIN ESPLANADE INCLUDED IN CONTRACT
MECHANIC STREET
ONE WAY
LIMIT OF SITE IMPROVEMENTS
EXISTING BRICK SIDEWALK
E. MOD (8)
K. TI (2)
A. GIN (1)
EOHW
S19°58'40"E 119.67'
A. ARH (1)
K. HP (4)
R. HK (1)
A. ARH (1)
K. HP (3)
A. GIN (1)
R. AGL (4)
E. MOD (4)
R. HK (1)
R. ELV (6)
A. ARH (1)
P. KD (5)
R. AGL (2)
P. CIS (3)
E. HAR (30)
H. STE (10)
R. AGL (2)
T. XME (2)
N/F DAVID W. JAMIESON
H. STE (10)
N70°04'51"E 100.38'
N/F ROBERT HAINS (GROUND LEASE AREA)
H. STE (10)
100.38' N70°04'51"E
B. NIG (1)
N/F SAAD D. ALBESHIR
H. STE (10)
T. XME (2)
R. AGL (1)
J. PRO (3)
VAN
VAN
R. AGL (2)
P. KD (5)
P. SP (1)
PERENNIAL BED
R. AGL (2)
M. PIN (1)
C. TOM (7)
M. CEN (1)
FLOWER BED
S6°55'38"W 100.80'
H. STE (10)
P. PRO (5)
B. NIG
FLOWER BED
C. COL (3)
J. HOL (11)
P. CIS (3)
IPS
N19°55'09"W 56.00'
126.87' N19°55'09"W
C. COL (1)
J. WIL (6)
C. WIK (3)
H. STE (20)
EXISTING BRICK SIDEWALK AND DRIVEWAY
EOHW
LIMIT OF SITE IMPROVEMENTS
GRASS ESPLANADE
P. CLE (6)



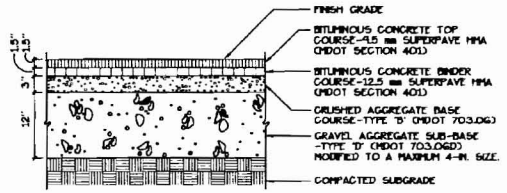
COMMON AREA PLAN

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



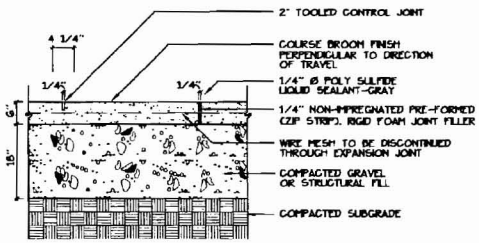
HANDICAP PARKING SIGNAGE

PAVING DETAILS



1/6 BITUMINOUS PAVEMENT- DRIVEWAY + PARKING

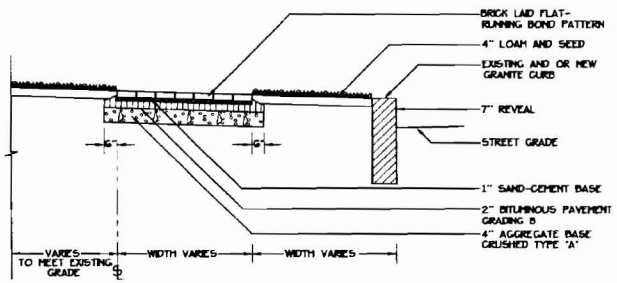
NOT TO SCALE



2/6 CONCRETE WALK

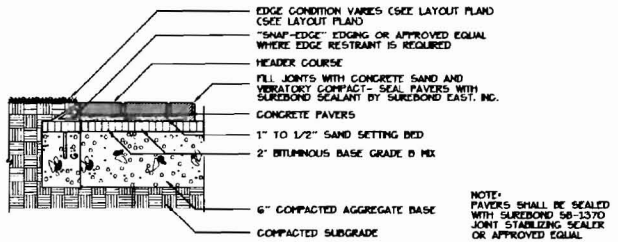
NOTE: DO NOT PROVIDE TOOLED EDGE ALONG GRANITE CURB

NOT TO SCALE



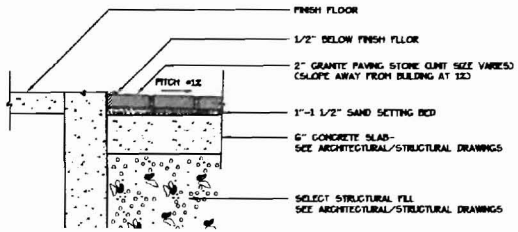
3/6 BRICK SIDEWALK WITH GRANITE CURB

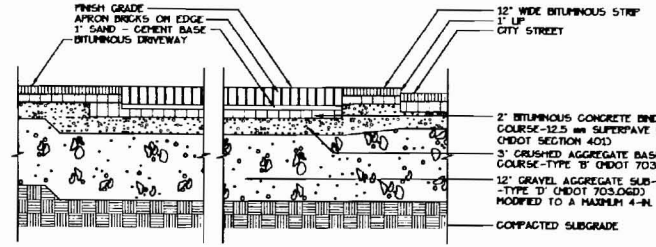
NOT TO SCALE



4/6 CONCRETE PAVERS

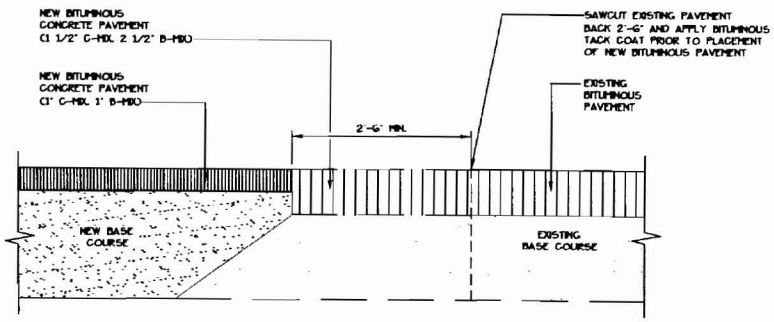
NOT TO SCALE





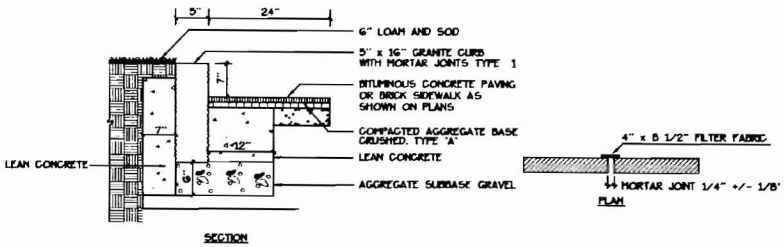
6/6 BRICK DRIVEWAY APRON

NOT TO SCALE



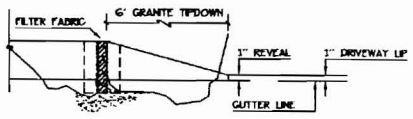
7/6 PAVEMENT SAWCUT DETAIL

NOT TO SCALE



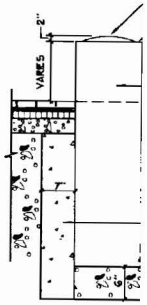
8/6 VERTICAL GRANITE CURB

NOT TO SCALE



9/6 TIPDOWN CURB

NOT TO SCALE



11/6 GRANITE

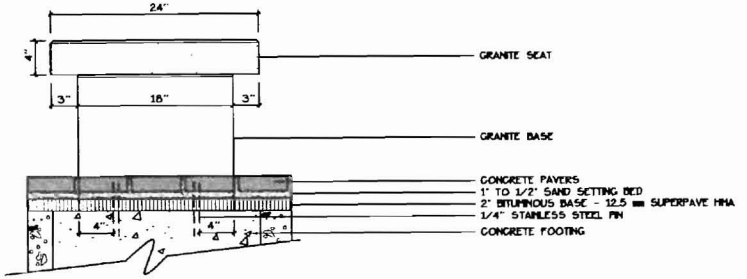
NOT TO SCALE

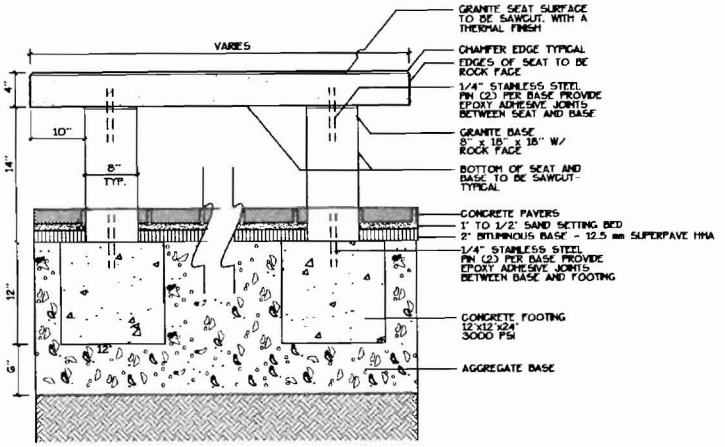
12/6 HANDICAP

NOT TO SCALE

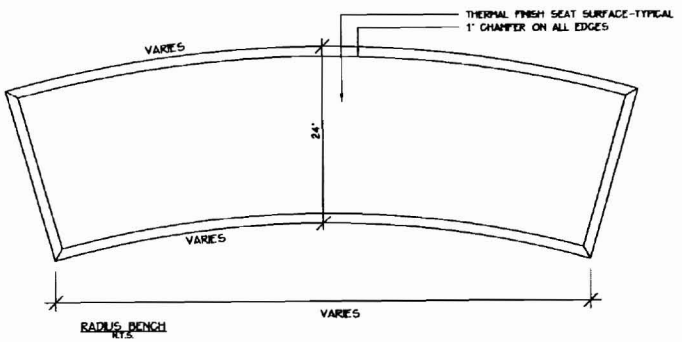
13/6 HANDICAP

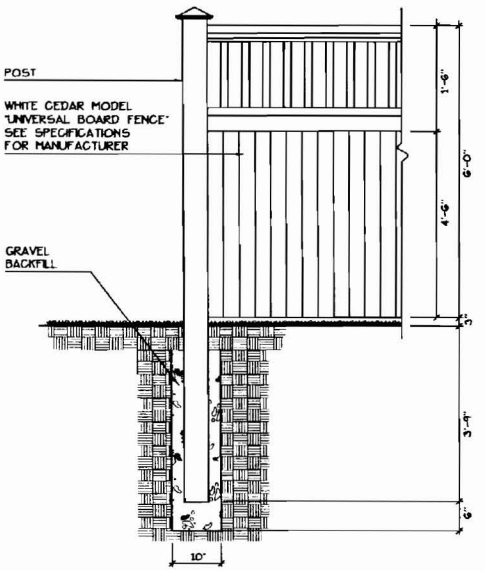
NOT TO SCALE





1/7 GRANITE BENCH DETAIL
NOT TO SCALE



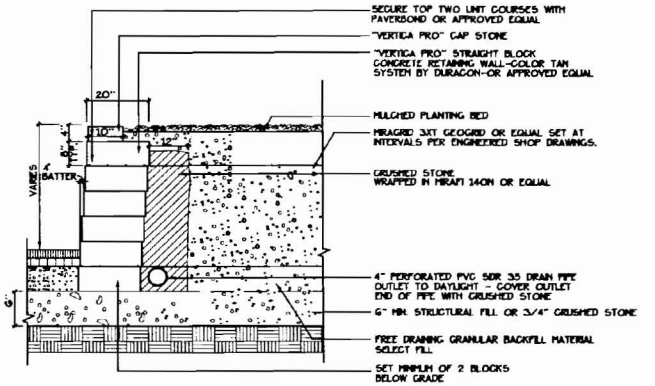


3/7 SOLID WOOD FENCE
NOT TO SCALE

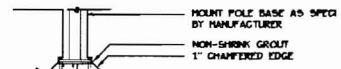
NOTES:

CONTRACTOR SHALL PROVIDE RETAINING WALL DESIGN AND SHOP DRAWINGS STAMPED BY A MAINE PROFESSIONAL ENGINEER. ENGINEER SHALL REFER TO GEOTECHNICAL REPORT INCLUDED IN PROJECT SPECIFICATIONS.

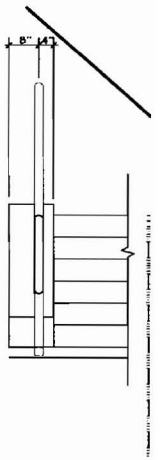
GEOTEXTILE GRID IS TO BE CUT, NOT PUNCTURED, WHERE GUIDE RAILS OR FENCE POSTS INTERSECT WITH GEOTEXTILE GRID.



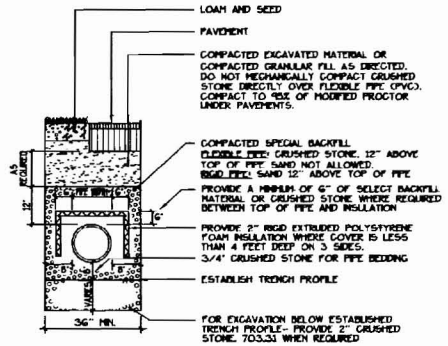
4/7 CONCRETE SEGMENTAL RETAINING WALL
NOT TO SCALE



6/7 ELECTRIC
NOT TO SCALE



7/7 CONCRE
NOT TO SCALE



NOTES:

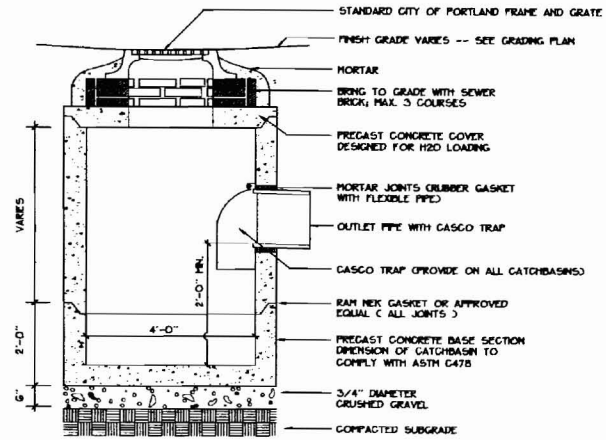
ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.

ALL TRENCH DIMENSIONS SHALL BE IN CONFORMANCE WITH THE CITY OF PORTLAND'S DETAIL FIGURE 1 1-13 OF THE TECHNICAL AND DESIGN STANDARDS AND GUIDELINES.

(1/8) PIPE TRENCH DETAIL

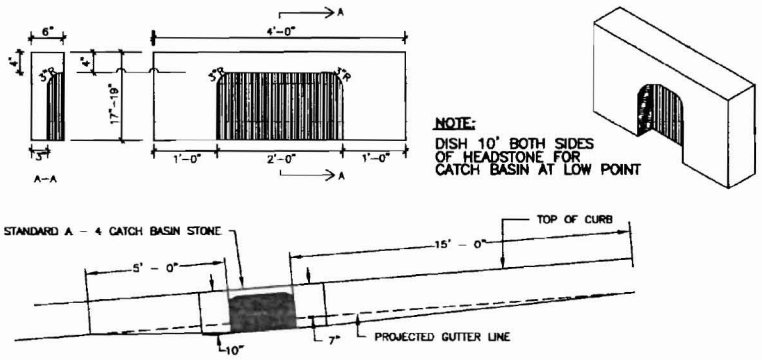
NOT TO SCALE

NOTE: GRATE AND COVER TO CONFORM TO CITY OF PORTLAND DESIGN STANDARDS.



(4/8) PRECAST CONCRETE CATCHBASIN WITH CASCO TRAP

NOT TO SCALE

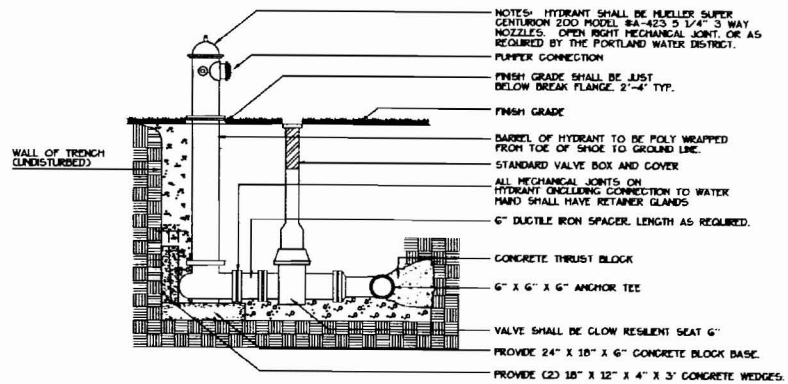


TYPICAL PAVEMENT GRADING ON SLOPES FOR CATCH BASIN AND INLET

(2/8) GRANITE INLET STONE

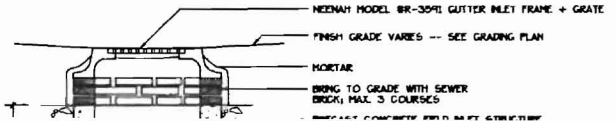
NOT TO SCALE

NOTE: SET BACK SHALL CONFORM TO M.D.O.T. POLICY FOR ABOVE GROUND UTILITY LOCATIONS TYPICALLY 3 FT FROM EDGE OR SHOULDER OF 1 FT FROM FACE OF CURB. CONFIRM WITH THE PORTLAND WATER DISTRICT.



(5/8) FIRE HYDRANT

NOT TO SCALE

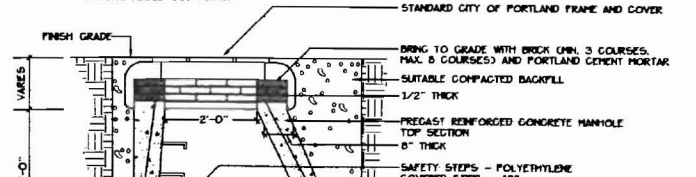


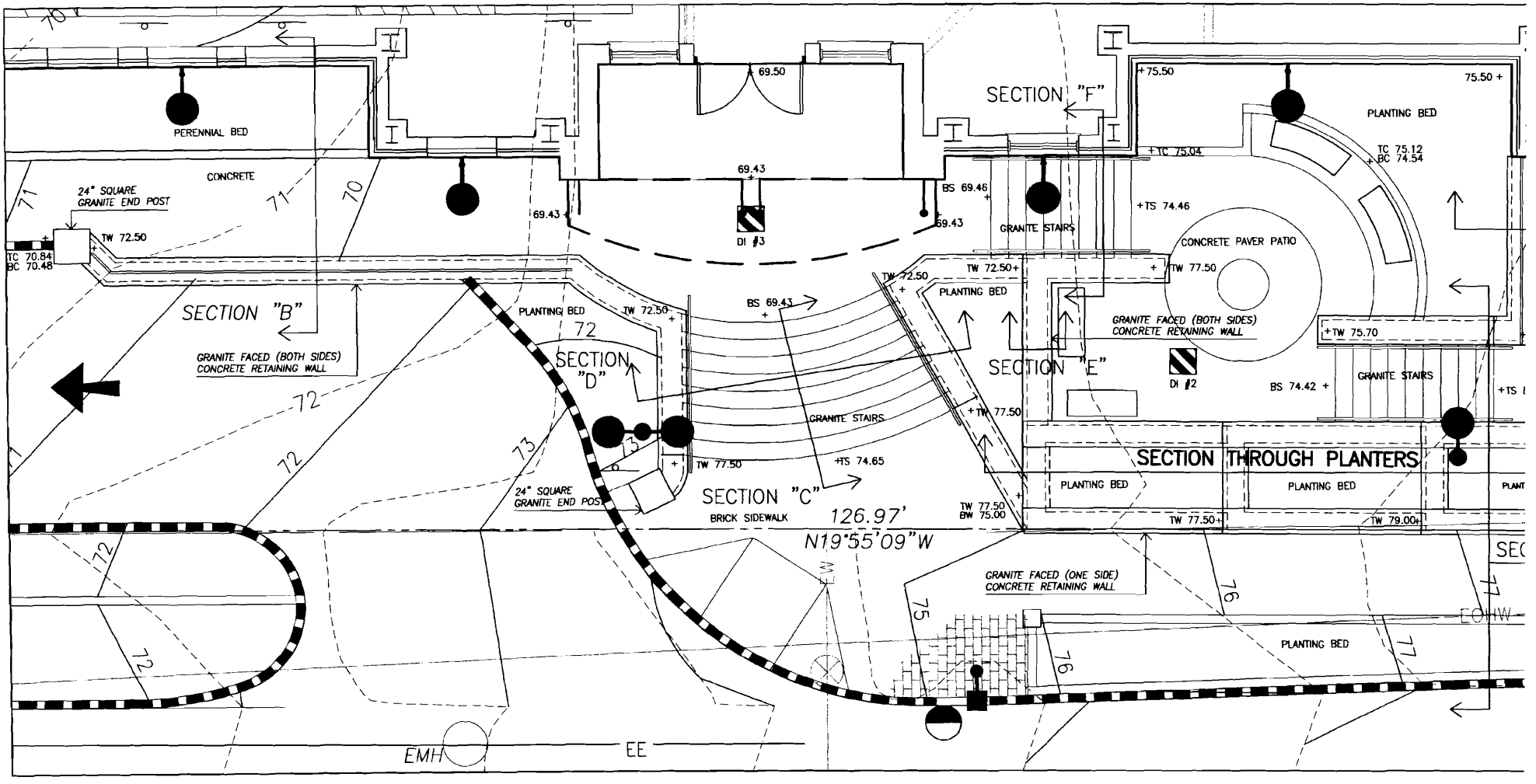
NOTES: PLUG ALL LIFTING HOLES, JOINT SECTIONS AND INSIDE MANHOLE BOOT WITH NON-SHRINK GROUT.

MANHOLE CHANNELS REQUIRING CHANGE IN ALIGNMENT, TO BE BUILT ON SMOOTH RADIUS. IF SIDE PIPES ENTER, CHANNEL TO BE SHAPED TO RECEIVE ADDED SIDE FLOW.

PRECAST REINFORCED CONCRETE BARREL SECTION, MATCH 1'-0" - 4'-0" LENGTH TO MEET FIELD CONDITIONS.

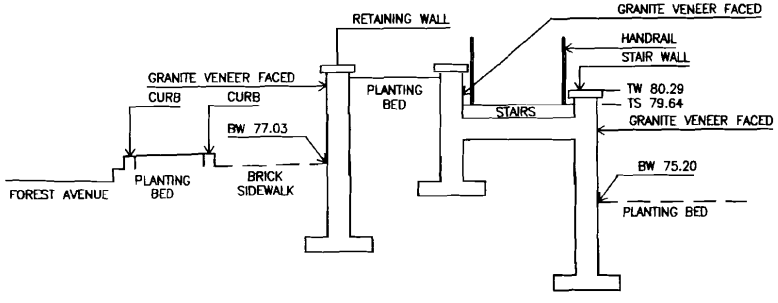
CUT BACK PIPE TO MANHOLE I.D.



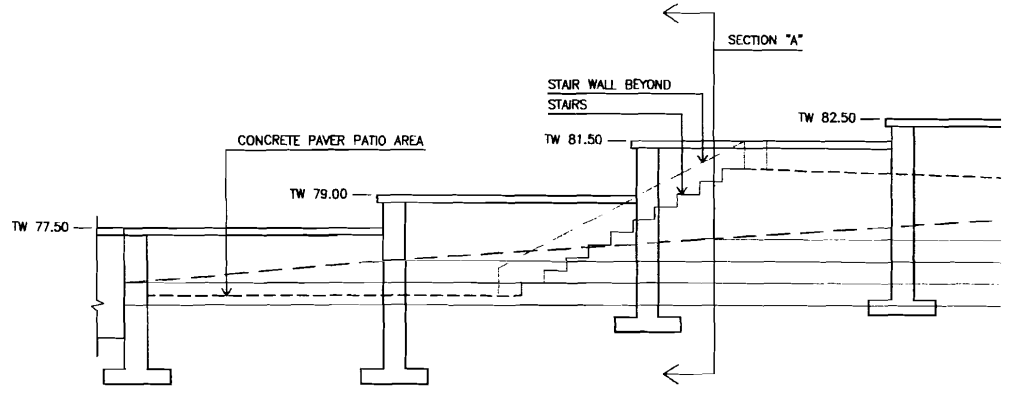


NOTES:

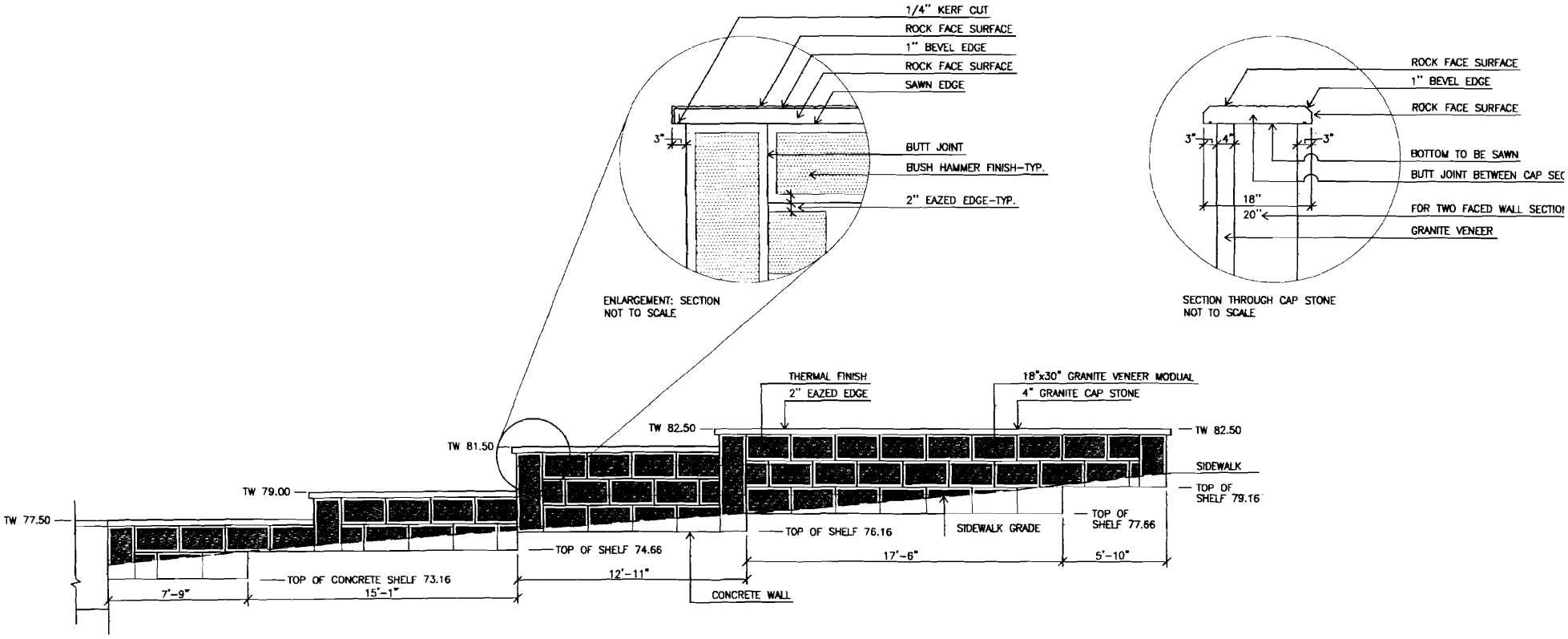
1. SEE SHEET 8 FOR GRANITE VENEER AND GRANITE CAP STONE ATTACHMENT DETAILS.
2. SEE SHEET 10 FOR GRANITE VENEER LAYOUT ELEVATIONS.
3. SEE STRUCTURAL/ARCHITECTURAL DRAWINGS FOR RETAINING WALL AND FOOTING DETAILS.



SECTION "A"



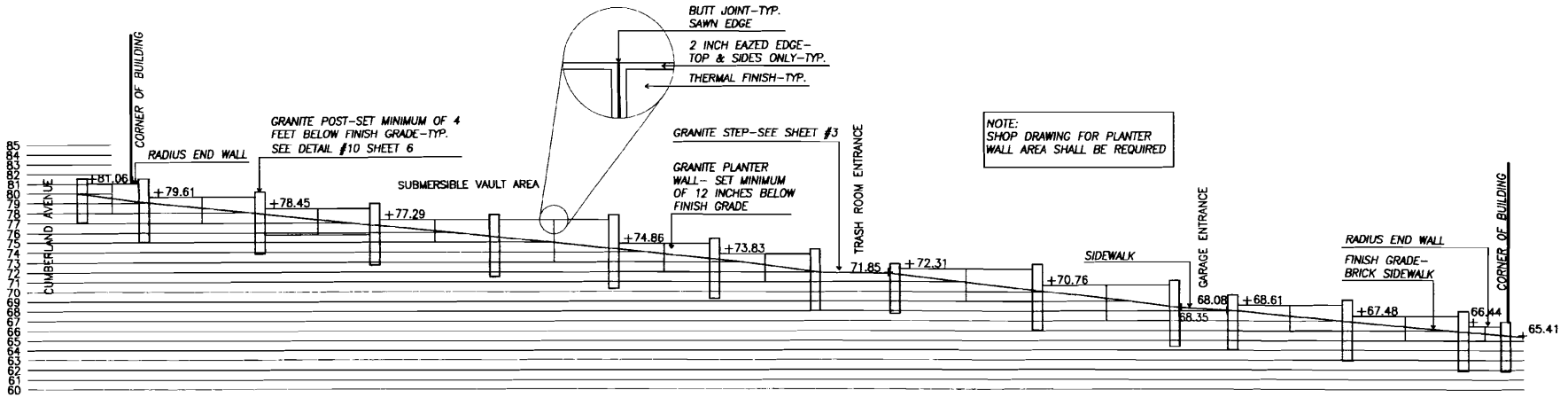
SECTION THROUGH PLA



1/10 FOREST AVENUE RETAINING WALL ELEVATION

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

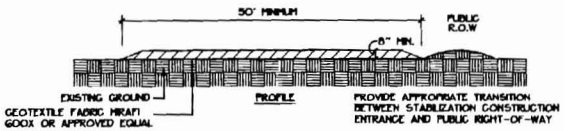
DETAILS TO BE COMPLETED

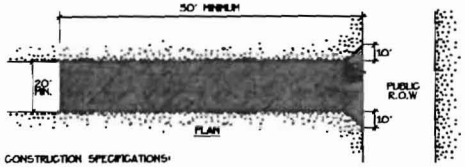


1/11 MECHANIC STREET GRANITE PLANTER WALL SECTION

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

DETAILS TO BE COMPLETED



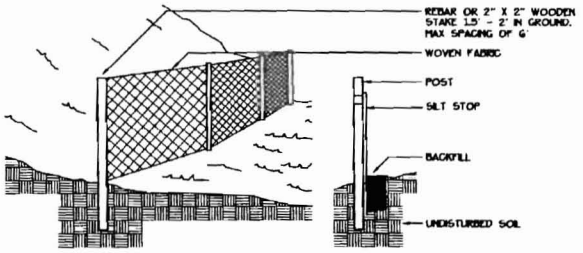


CONSTRUCTION SPECIFICATIONS:

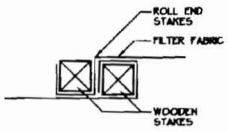
1. STONE SIZE: AASHTO DESIGNATION M 43, SIZE NO. 2 (2.5" TO 1.5"). USE CRUSHED STONE.
2. LENGTH: AS EFFECTIVE, BUT NOT LESS THAN 50 FEET.
3. THICKNESS: NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. WASHING: WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE THROUGH THE USE OF SAND BAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

1/12 STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



1. SILT FENCE TO BE INSTALLED PARALLEL TO EXISTING CONTOURS DOWNSLOPE FROM AREAS OF SOIL DISTURBANCE.
2. SILT FENCE TO BE SECURELY ATTACHED TO THE UPSLOPE SIDE OF THE SUPPORTING STAKES.
3. BOTTOM 4 TO 6 INCHES OF SILT FENCE TO BE BURIED IN SLOPE AND BACKFILLED WITH COMPACTED SOIL.
4. INSPECTION SHALL BE MADE AFTER EVERY RAINFALL WITH REMOVAL OF EXCESSIVE SEDIMENT AND REPAIR OF THE FENCE ACCOMPLISHED PROMPTLY.
5. SILT FENCE AND ACCUMULATED SEDIMENT SHALL BE REMOVED AS SOON AS PERMENANT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

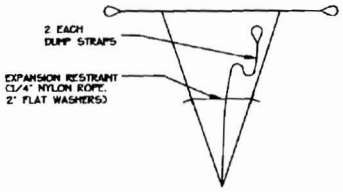


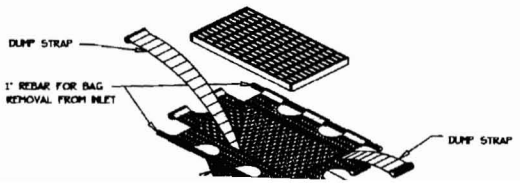
END POST OVERLAP DETAIL

NOT TO SCALE

2/12 SILT FENCE

NOT TO SCALE





GENERAL NOTES

1. THE NOTES ON THESE DRAWINGS ARE NOT INTENDED TO REPLACE SPECIFICATIONS. SEE SPECIFICATIONS FOR REQUIREMENTS IN ADDITION TO GENERAL NOTES. INCONSISTENCIES BETWEEN THESE DRAWINGS AND THE SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO PROCEEDING WITH THE AFFECTED PORTION OF THE WORK.

2. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH JOB SPECIFICATIONS AND ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND SITE DRAWINGS. CONSULT THESE DRAWINGS FOR LOCATIONS AND DIMENSIONS OF OPENINGS, CHASES, INSERTS, REGLETS, SLEEVES, DEPRESSIONS, AND OTHER DETAILS NOT SHOWN ON STRUCTURAL DRAWINGS.

3. ALL DIMENSIONS, EXISTING CONDITIONS, AND AS-BUILT CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PART OF THE WORK.

4. THE STRUCTURE IS DESIGNED TO BE SELF SUPPORTING AND STABLE ONLY AFTER THE STRUCTURAL WORK CONTAINED IN THE S- DRAWINGS IS COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENTS DURING ERECTION. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIEDOWNS. SUCH MATERIAL SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.

5. SECTIONS AND DETAILS SHOWN ON ANY STRUCTURAL DRAWINGS SHALL BE CONSIDERED TYPICAL FOR SIMILAR CONDITIONS AS DETERMINED BY THE STRUCTURAL ENGINEER. THE STRUCTURAL ENGINEER RESERVES THE RIGHT TO INTERPRET DETAILS TO ADDRESS OTHER PROJECT CONDITIONS.

6. PROVIDE AND INSTALL NECESSARY MATERIAL TO CONNECT ELEVATOR SUPPORT BEAMS AND GUIDE RAILS. LOCATION AND SIZE OF MEMBERS AND ANY INSERTS REQUIRED SHALL BE DETERMINED BY THE ELEVATOR MANUFACTURER.

7. THE CONTRACTOR SHALL SUBMIT COMPLETE SHOP DRAWINGS FOR ALL PARTS OF THE WORK, INCLUDING DESCRIPTION OF SHORING, AND CONSTRUCTION METHODS AND SEQUENCING WHERE APPLICABLE. NO PERFORMANCE OF THE WORK INCLUDING, BUT NOT LIMITED TO, FABRICATION OR ERECTION OF NEW STRUCTURAL ELEMENTS, SHALL COMMENCE WITHOUT REVIEW OF THE SHOP DRAWINGS BY THE ARCHITECT AND ENGINEER. FOR SHOP DRAWINGS AND SUBMITTALS REQUIRED, REFERENCE THE PROJECT SPECIFICATIONS.

8. ALL APPLICABLE FEDERAL, STATE, AND MUNICIPAL REGULATIONS SHALL BE FOLLOWED, INCLUDING THE FEDERAL DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ACT.

9. IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (2003 EDITION, SECTION 1704.1), A STATEMENT OF SPECIAL INSPECTIONS IS REQUIRED AS A CONDITION FOR PERMIT ISSUANCE BY THE LOCAL CODE OFFICIAL. THIS STATEMENT SHALL INCLUDE A COMPLETE LIST OF MATERIALS AND WORK REQUIRING SPECIAL INSPECTIONS, THE INSPECTIONS TO BE PERFORMED AND A LIST OF THE INDIVIDUALS, APPROVED AGENCIES AND FIRMS INTENDED TO BE RETAINED FOR CONDUCTING SUCH INSPECTIONS.

10. REFERENCE THE PROJECT SPECIFICATIONS FOR ALL TESTING REQUIREMENTS.

DESIGN LOADS

1. BUILDING CODE:
   INTERNATIONAL BUILDING CODE, 2003 EDITION
   ASCE 7-02 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

2. DESIGN FLOOR LIVE LOADS:

LOBBIES & MEETING ROOM:	100 PSF
FIRST FLOOR CORRIDOR:	100 PSF
PRIVATE ROOMS & CORRIDORS SERVING:	40 PSF
+ PARTITIONS	
STAIRS:	100 PSF
ROOF:	100 PSF

3. DESIGN ROOF SNOW LOAD:

GROUND SNOW LOAD (Pg):	60 PSF
SNOW EXPOSURE FACTOR (Ce):	1.0
SNOW LOAD IMPORTANCE FACTOR (Is):	1.0
SNOW LOAD THERMAL FACTOR (Ct):	1.1
FLAT ROOF SNOW LOAD (Pf):	46 PSF + DRIFT

4. DESIGN WIND LOAD:

BASIC WIND SPEED:	100 MPH
WIND LOAD IMPORTANCE FACTOR (Iw):	1.00
WIND EXPOSURE:	C
INTERNAL PRESSURE COEFFICIENT:	±0.18
COMPONENTS & CLADDING LOADS PER ASCE 7-02	

5. DESIGN SEISMIC LOADS:
   EQUIVALENT LATERAL FORCE PROCEDURE
   SEISMIC USE GROUP: I
   SEISMIC IMPORTANCE FACTOR (Ie):1.0
   MAPPED SPECTRAL RESPONSE ACCELERATIONS:
   Ss: 0.369
   S1: 0.098
   SEISMIC SITE CLASS: C
   SPECTRAL RESPONSE COEFFICIENTS:
   Sds: 0.442
   Sd1: 0.167
   SEISMIC DESIGN CATEGORY: B
   BASIC STRUCTURAL SYSTEM: BUILDING FRAME SYSTEM
   BASIC SEISMIC FORCE RESISTING SYSTEM:
   ORDINARY STEEL CONCENTRICALLY BRACED FRAMES
   ORDINARY REINFORCED CONCRETE SHEARWALL
   RESPONSE MODIFICATION FACTOR (R):, X: 3.0
   Y: 3.0
   [illegible] USED FOR STRUCTURAL STEEL SYSTEM NOT

FOUNDATION NOTES (BEDROCK SUPPORTED)

1. FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH A REPORT ENTITLED "REPORT ON SUBSURFACE EXPLORATIONS AND FOUNDATION DESIGN RECOMMENDATIONS, THE PROPOSED WATERVIEW APARTMENTS AT BAYSIDE, 409 CUMBERLAND AVENUE, PORTAND, MAINE", DATED MARCH 2005 WITH A SUPPLEMENTAL MEMORANDUM DATED JUNE 30. 2005, ENTITLED "SUPPLEMENT RECOMMENDATONS – DRILLED SHAFT FOUNDATIONS". THE RECOMMENDATIONS OF THESE DOCUMENTS ARE PART OF THIS WORK. REFER TO THESE DOCUMENTS FOR SPECIFIC RECOMMENDATIONS.

2. FOUNDATION DESIGN IS BASED ON SHALLOW SPREAD FOOTINGS AND DRILLED PIERS BEARING ON SUITABLE UNDISTURBED NATIVE BEDROCK OR FLOWABLE FILL EXTENDING TO UNDISTURBED NATIVE BEDROCK PER THE REQUIREMENTS OF THE GEOTECHICAL REPORT. REFER TO THIS REPORT FOR SPECIFIC BEARING RECOMMENDATIONS.

3. ALLOWABLE BEARING CAPACITY 35 TONS PER SQUARE FOOT.

4. EXTEND BOTTOM OF EXTERIOR FOOTINGS AT LEAST 4.5 FEET BELOW THE FINAL EXTERIOR GRADE FOR PROTECTION AGAINST FROST.

5. NO CONCRETE OR FLOWABLE FILL FOR BUILDING SUPPORT SHALL BE PLACED UNTIL SUBGRADES HAVE BEEN OBSERVED AND APPROVED BY THE GEOTECHNICAL ENGINEER.

6. REFERENCE THE GEOTECHNICAL REPORT FOR ALL EXCAVATION, BACKFILL, COMPACTION, CONSTRUCTION DEWATERING AND PERMANENT DRAINAGE REQUIREMENTS.

7. SOILS EXPOSED AT THE BASE OF ALL SATISFACTORY FOUNDATION EXCAVATIONS SHOULD BE PROTECTED AGAINST ANY DETRIMENTAL CHANGE IN CONDITION, SUCH AS DISTURBANCE FROM RAIN OR FROST. SURFACE RUNOFF SHOULD BE DRAINED AWAY FROM THE EXCAVATIONS AND NOT BE ALLOWED TO POND. FOUNDATION EXCAVATIONS AND SHOULD BE ADEQUATELY PROTECTED FROM RAINFALL OR FREEZING CONDITIONS. GROUNDWATER SHOULD BE ANTICIPATED FOR EXCAVATIONS AND APPROPRIATE DEWATERING MEASURES SHALL BE EMPLOYED.

8. DRILLED PIER BEARING STRATA, CAPACITY AND EMBEDMENT DEPTH SHALL BE VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER BEFORE PLACING CONCRETE. SEE SPECIFICATIONS FOR DETAILS.

9. DRILLED PIERS SHALL BE DRILLED IN PLACE AND FILLED WITH CONCRETE. THE BED AND SHAFT SHALL BE LEVELED AND CLEARED OF ALL LOOSE MATERIAL BEFORE CONCRETE IS PLACED. THE SHAFT SHALL BE KEPT FREE OF WATER.

10. THE TERMS DRILLED SHAFT AND DRILLED PIER ARE INTERCHANGEABLE FOR THESE DOCUMENTS.

11. EXCAVATIONS FOR BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS. BRACED EXCAVATIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MAINE. DO NOT UNDERMINE EXISTING FOUNDATIONS OF ANY ADJACENT STRUCTURES. REFER TO THE GEOTECHNICAL REPORT FOR ADDITIONAL AND/OR MORE SPECIFIC REQUIREMENTS.

CONCRETE NOTES

1. CONCRETE WORK SHALL CONFORM TO "ACI MANUAL OF CONCRETE PRACTICE", LATEST EDITION. THIS PUBLICATION IS AVAILABLE THROUGH THE AMERICAN CONCRETE INSTITUTE (248) 848-3800.

2. ALL CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH AS FOLLOWS:
   GRADE BEAM/FOOTING CONCRETE STRENGTH: 4,000 PSI.
   CONCRERE WALLS & PIERS (PILASTERS): 4,000 OR 5,000 PSI. (SEE DIAGRAM S1.1)
   DRILLED PIER FILL: 4,000 PSI.
   INTERIOR SLABS-ON-GRADE EXCLUDING GARAGE SLAB: 3,000 PSI.
   PLANK TOPPING: 3,000 PSI.
   EXTERIOR SLAB-ON-GRADE/GARAGE SLAB: 5,000 PSI.
   EXTERIOR SITE RETAINING WALLS: 3,000 PSI.

   ADDITIONAL CONCRETE MIX PERFORMANCE DATA INCLUDING AIR CONTENT, WATER-CEMENT RATIO, AIR CONTENT, AGGREGATE SIZE, SLUMP, ETC. HAS BEEN INCLUDED IN THE PROJECT SPECIFICATIONS. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIRMENTS.

3. CONCRETE SHALL NOT BE PLACED IN WATER OR ON FROZEN GROUND.

4. PROVIDE PVC SLEEVES WHERE PIPES PASS THROUGH EXTERIOR CONCRETE, OR SLABS.

5. REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60 DEFORMED BARS AND SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI 315, LATEST EDITION.

6. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185 AND BE PROVIDED IN FLAT SHEETS.

7. MINIMUM CONCRETE PROTECTIVE COVERING FOR REINFORCEMENT, UNLESS NOTED OTHERWISE, SHALL BE AS FOLLOWS:

   A) SURFACES CAST AGAINST AND PERMANENTLY IN CONTACT WITH EARTH, 3.0"
   B) FORMED SURFACES IN CONTACT WITH EARTH OR EXPOSED TO WEATHER
      #5 BARS, 5/8" DIAMETER WIRE, AND SMALLER, 1.5"
      #6 THROUGH #11 BARS, 2.0"
   C) SURFACES NOT IN CONTACT WITH EARTH OR EXPOSED TO WEATHER
      WALLS, SLABS, JOISTS #11 BARS AND SMALLER, 1.0"
      BEAMS, GIRDERS, AND COLUMNS; ALL REINFORCEMENT, 1.5"

8. REINFORCEMENT SHALL BE CONTINUOUS AROUND CORNERS AND AT INTERSECTIONS. PROVIDE LAPPED BARS AT NECESSARY SPLICES OR HOOKED BARS AT DISCONTINUOUS ENDS. PROVIDE TENSION LAP SPLICES PER THE SCHEDULE ON S2.1, FOR ALL REINFORCING UNLESS OTHERWISE SHOWN ON PLAN.

9. WELDING OF REINFORCEMENT IS NOT PERMITTED.

10. FOR ALL OPENINGS IN CONCRETE WALLS AND SLABS, PROVIDE SUPPLEMENTAL REINFORCING AROUND OPENING AS SHOWN ON THE CONTRACT DOCUMENTS TYPICAL DETAILS.

STRUCTURAL STEEL NOTES

1. STRUCTURAL STEEL FABRICATION, ERECTION, AND CONNECTION DESIGN SHAL CONFORM TO AISC "SPECIFICATION FOR THE DESIGN FABRICATION, AND ERE OF STRUCTURAL STEEL" 9TH EDITION, AND THE "CODE OF STANDARD PRAC LATEST EDITION.

2. STRUCTURAL STEEL: STEEL PLATES, SHAPES, AND BARS, CONFORM TO AST UNLESS NOTED OTHERWISE (U.N.O.). STRUCTURAL STEEL SHAPES DESIGNATI THE DRAWINGS FOR WIDE-FLANGE SECTIONS: ASTM A992 (ASTM A572 GRA WITH SPECIAL REQUIREMENTS PER AISC TECHNICAL BULLETIN #3 DATED MA

3. STRUCTURAL TUBING: CONFORM TO ASTM A500 GRADE B46 KSI.

4. FIELD CONNECTIONS SHALL BE BOLTED USING 3/4" DIAMETER ASTM A325N STRENGTH BOLTS (U.N.O.) EXCEPT WHERE SLIP CRITICAL CONNECTIONS ARE REQUIRED AND NOTED BY A325 (SC) ON THE DRAWINGS. PROVIDE SLIP C CONNECTIONS AT ALL MOMENT CONNECTIONS, BRACED FRAMES, RELIEVING ANGLES AND AS OTHERWISE NOTED. USE A490 BOLTS WHERE INDICATED.

5. WHERE WELDING IS INDICATED, ALL WELDING SHALL CONFORM TO AWS D1. LATEST EDITION. ELECTRODES SHALL BE CONFORM TO AWS A5.1 E70XX S WITH PROPER ROD TO PRODUCE OPTIMUM WELD (LOW HYDROGEN).

6. SEE CONCRETE NOTES AND DRAWINGS FOR ANCHOR BOLT INFORMATION, TY

7. PROVIDE 3/8" MINIMUM STIFFENER PLATES EACH SIDE OF BEAM WEB AT FRAMING OVER COLUMNS AND AT BEAMS SUPPORTING COLUMNS ABOVE.

8. PROVIDE 1/4" THICK LEVELING PLATE UNDER ALL COLUMN BASE PLATES OTHERWISE NOTED. LEVELING PLATES SHALL BE SET AND GROUTED PRIOR ERECTING COLUMNS.

9. PROVIDE ALL MISCELLANEOUS ANGLES, PLATES, ANCHORS, BOLTS, ETC., SI ARCHITECTURAL DRAWINGS FOR SUPPORT OF BLOCKING, PARAPETS, FINISH COORDINATE WITH MISCELLANEOUS METAL FABRICATOR TO ENSURE COMPLE COVERAGE OF ALL ITEMS.

10. PROVIDE L 4 x 4 x 3/8 SLAB SUPPORT ANGLE AS REQUIRED AT COLUM STRUCTURAL MEMBERS DO NOT FRAME IN AT ALL FOUR SIDES.

GIRDER-SLAB STRUCTURAL SYSTEM NOTES

1. THE OPEN WEB DISSYMMETRIC BEAM (DB) SHALL BE FABRICATED FROM A GRADE 50 STANDARD WIDE FLANGE SECTIONS WITH GRADE 50 FLAT BAR FLANGE AND SHALL MEET AISC STANDARDS (EXCEPT FOR DEPTH, TOLERAN UNPAINTED UNLESS NOTED OTHERWISE. PROVIDE CAMBER WHERE SPECIFI CAMBER CAN BE BUILT IN DURING ASSEMBLY OF THE DISSYMETRIC BEAM.

2. ERECTOR IS RESPONSIBLE FOR DETERMINING AND PROVIDING ALL SHORIN TO ERECT THE SUPERSTRUCTURE, AS PART OF THE CONTRACTOR'S MEANS REQUIREMENTS. IN ADDITION, PROVIDE SHORING WHERE REQUIRED FOR STRENGTH.

3. MINIMUM BEARING OF PRECAST PRESTRESSED HOLLOW CORE SLAB UNITS BEAMS SHALL BE 2 INCHES. OPEN THE TOP OF EACH SLAB CORE FOR TO GROUTING. REFER TO THE GIRDER-SLAB SYSTEM REFERENCE INFORM ADDITIONAL REQUIREMENTS.

4. REINFORCING STEEL (ASTM A615, GRADE 60) SHALL BE PLACED THROUG DISSYMMETRIC BEAM WEB OPENINGS INTO THE SLAB CORES.

5. CEMENTITIOUS GROUT (MIN. 4000 PSI) SHALL BE PLACED MONOLITHICALL THROUGH THE DISSYMMETRIC BEAM WEB OPENINGS AND INTO THE SLAB SOLID FOR A MINIMUM OF 8 INCHES, LEVEL TO THE SLAB SURFACE WITH MINIMUM AVERAGE THICKNESS OVER THE TOP FLANGE (U.N.O.) ATTAIN S STRENGTH OF GROUT PRIOR TO PLACEMENT OF PLANK TOPPING.

6. THE GIRDER-SLAB SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WIT UNDERWRITERS LABORATORIES, INC. FLOOR CEILING ASSEMBLY SPECIFIED ARCHITECT.

7. THE GIRDER-SLAB SYSTEM AND D-BEAM GIRDERS SHALL BE DISTRIBUTED ASSEMBLED BY STEEL CONTRACTORS AUTHORIZED BY GIRDER-SLAB TECHNOLOGIES LLC OF NJ IN CONFORMANCE WITH ITS DESIGN-GUIDE & DISTRIBUTION REQUIREMENTS. STEEL CONTRACTOR/DISTRIBUTOR CONTACT INFORMATION: 1-888-478-1100 OR WWW.GIRDER-SLAB.COM.

8. THE DISTRIBUTOR OF THE GIRDER-SLAB SYSTEM SHALL PROVIDE TO THE AND THE ARCHITECT A GIRDER-SLAB COMPLIANCE CERTIFICATE UPON CO SYSTEM ASSEMBLY AND CONSTRUCTION.

9. COMPLY WITH ALL APPLICABLE PROVISIONS OF THE STANDARDS AND CO IN THE PROJECT SPECIFICATIONS.

METAL DECK

1. THE METAL ROOF DECK SHALL BE FORMED OF STEEL SHEETS CONFORMING TO ASTM STANDARD A611.

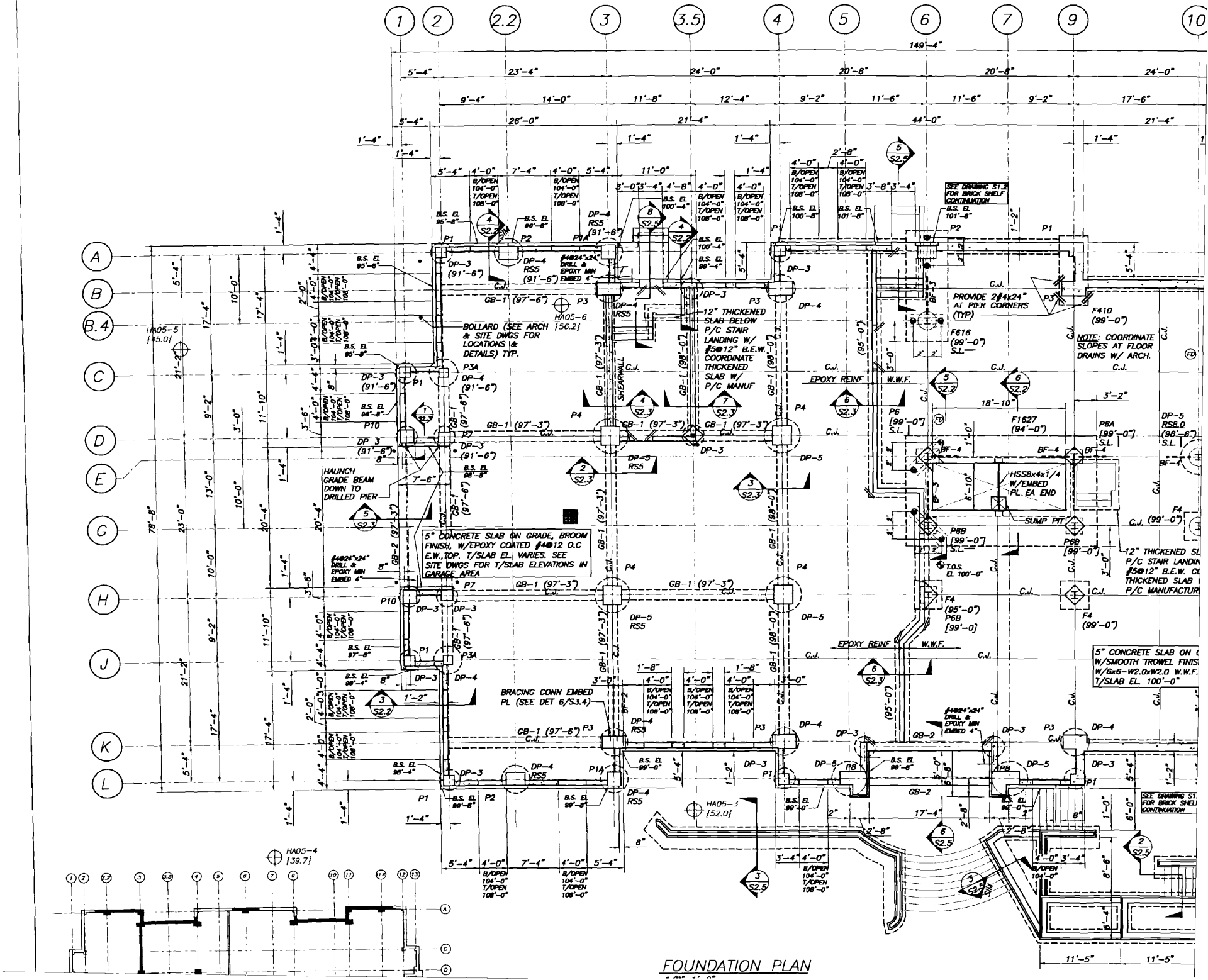
2. ROOF DECK SHALL BE AS NOTED ON THE DRAWINGS (OR EQUIVALENT).

3. FOR DECK ATTACHMENTS, PENETRATIONS AND ACCESSORIES, REFER TO SPECIFICATIONS.

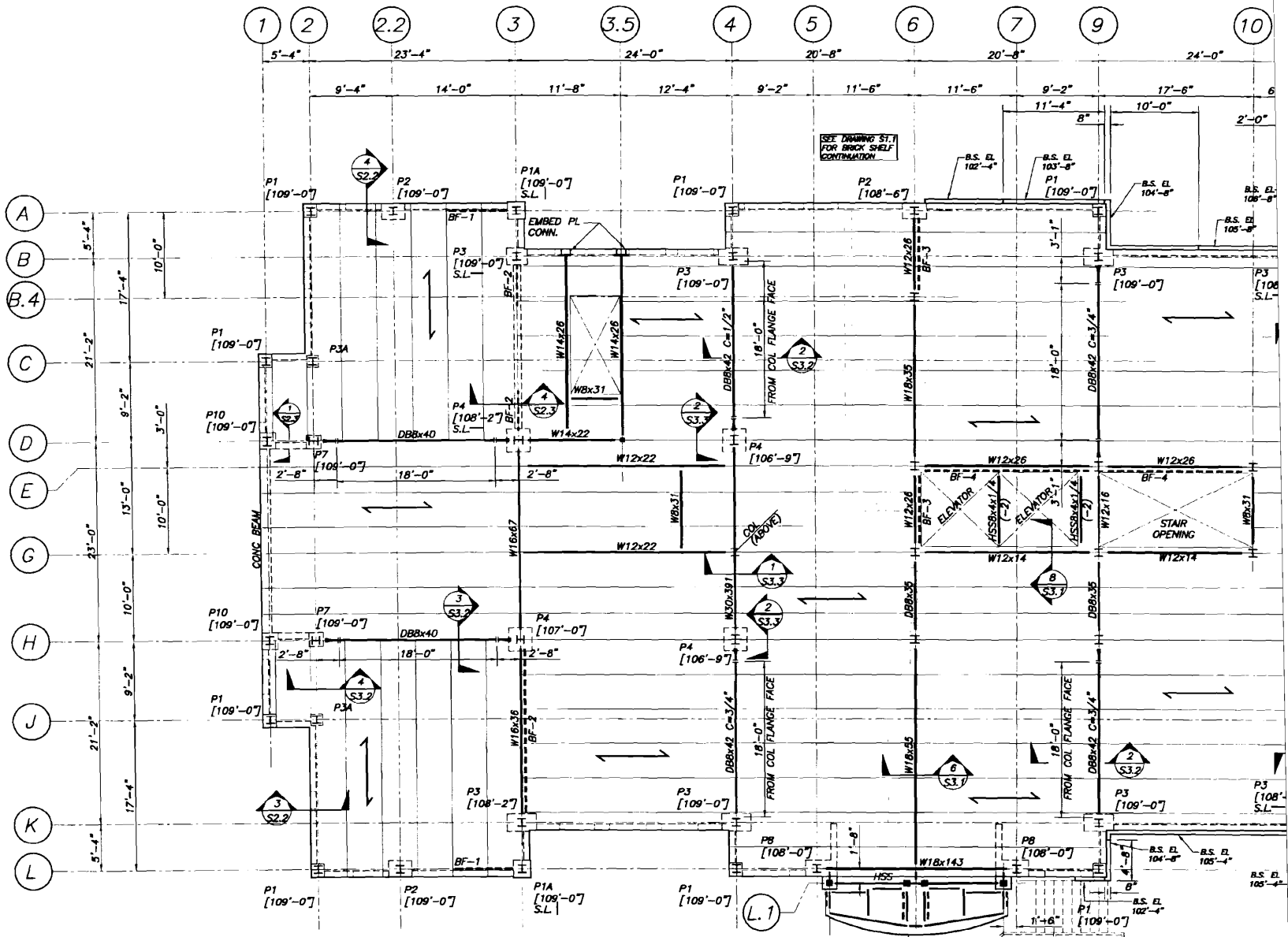
PRECAST CONCRETE HOLLOW CORE PLANK AND STAIRS

1. ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING: "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", PCI MNL- "MANUAL FOR QUALITY CONTROL FOR PLANTS AND PRODUCTION OF PRE AND PRESTRESSED CONCRETE PRODUCTS" AND PCI "DESIGN HANDBOOK- AND PRESTRESSED CONCRETE".

2. PRECAST HOLLOW CORE PLANK AND STAIRS SHALL BE DESIGNED FOR T LOADS AS INDICATED UNDER "DESIGN LOADS" THIS SHEET. DESIGN SHO INCLUDE FOR ALL DEAD LOADS DUE TO SELF WEIGHT AND APPLIED TOP



FOUNDATION PLAN

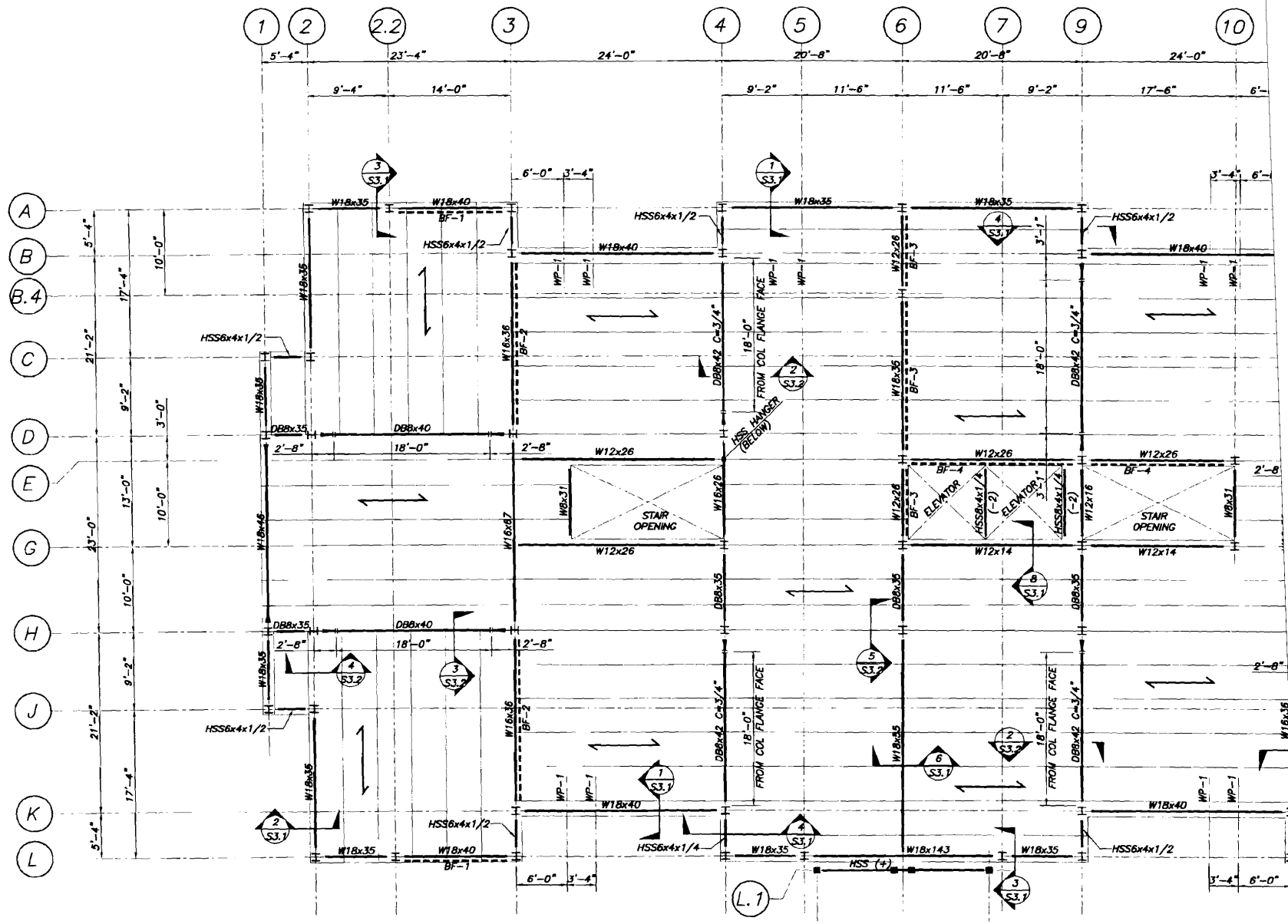


1st FLOOR FRAMING PLAN

1/8"=1'-0"

NOTES:

1. "DB_x_" INDICATES DISSYMMETRIC BEAM (DB) GRADE 50 STEEL. SEE S3.2 FPR TYPICAL D-BEAM/GIRDER SLAB DETAILS
2. TOP OF D BEAM BOTTOM FLANGE IS TO MATCH T/WIDE FLANGE STEEL INDICATED BELOW (U.N.O.)
3. TOP OF WIDE FLANGE STEEL EL 110'-2" U.N.O.
4. ⟶ INDICATES SPAN DIRECTION OF 8" PRECAST PRESTRESSED

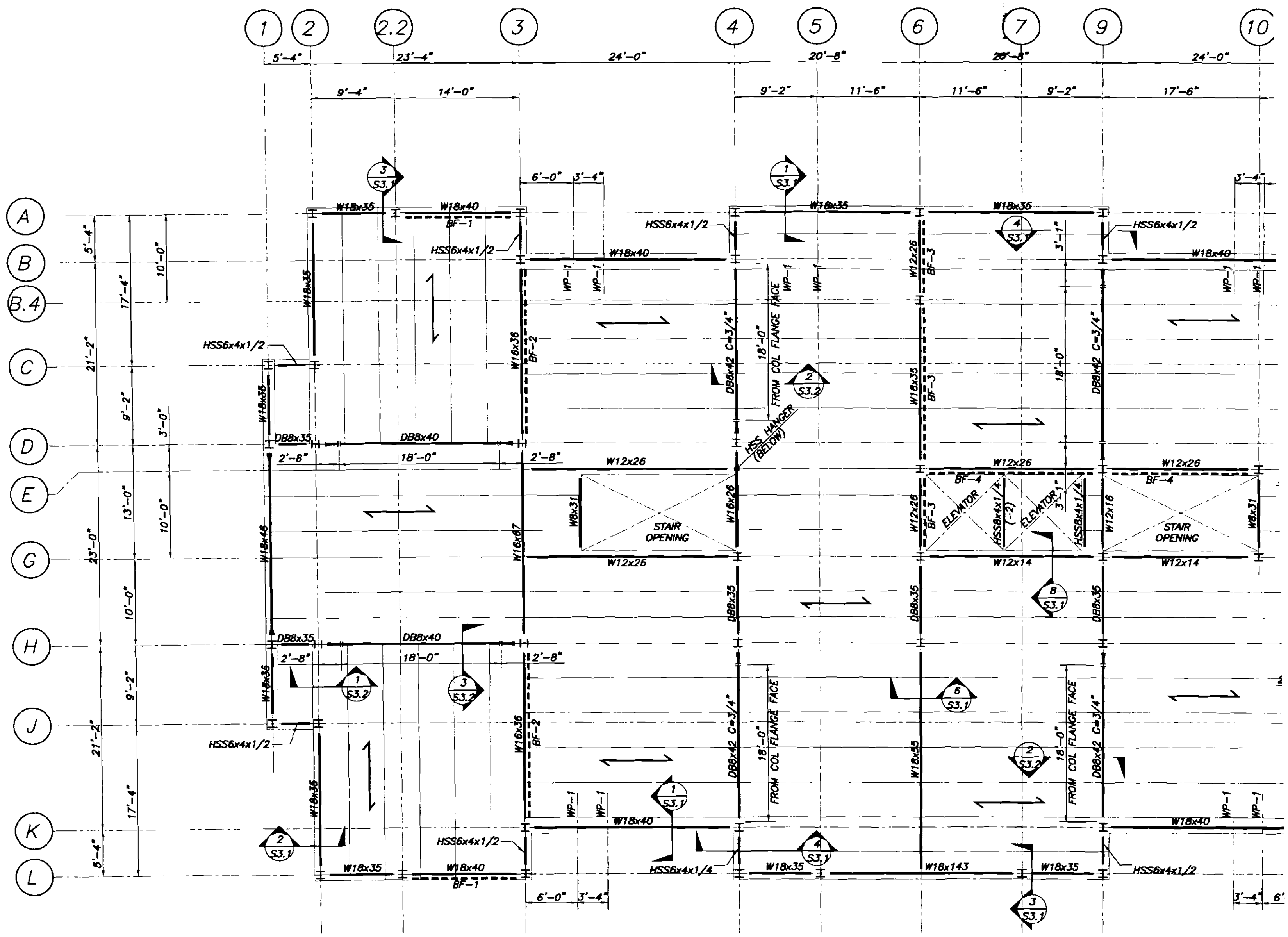


2nd FLOOR FRAMING PLAN

1/8"=1'-0"

NOTES:

1. "DB_x_" INDICATES DISSYMMETRIC BEAM (DB) GRADE 50 STEEL.
2. TOP OF D BEAM BOTTOM FLANGE IS TO MATCH T/WIDE FLANGE STEEL INDICATED BELOW (U.N.O.)
3. TOP OF WIDE FLANGE STEEL EL 121'-10" U.N.O.

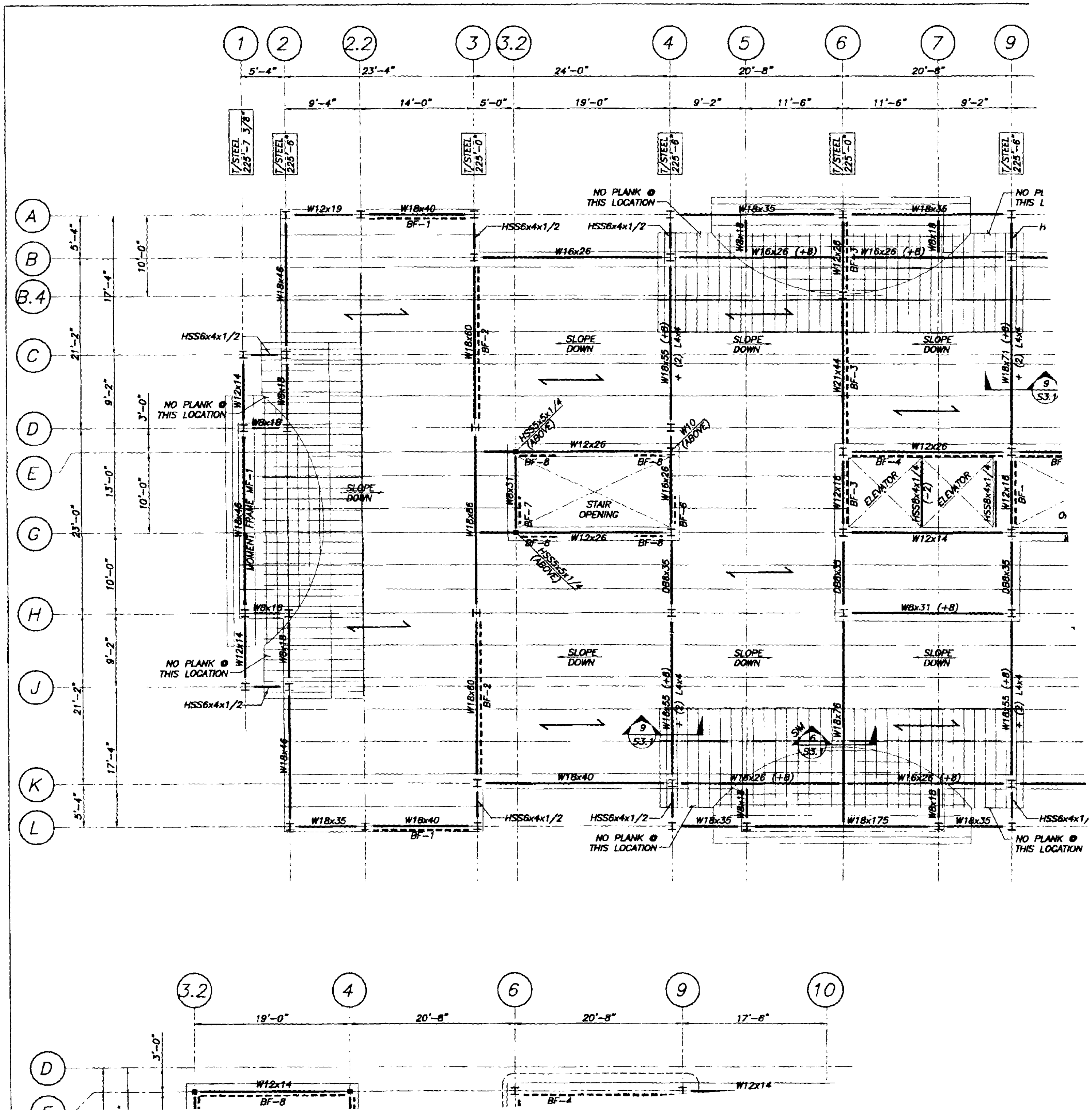


3rd FLOOR THRU 12th FLOOR

1/8"=1'-0"

NOTES:

1. "DB_x_" INDICATES DISSYMMETRIC BEAM (DB) GRADE 50 STEEL.
2. TOP OF D BEAM BOTTOM FLANGE IS TO MATCH T/WIDE FLANGE STEEL INDICATED BELOW (U.N.O.)
3. TOP OF WIDE FLANGE STEEL EL 131'-2" U.N.O. AT 3rd FLOOR
TOP OF WIDE FLANGE STEEL EL 140'-6" U.N.O. AT 4th FLOOR
TOP OF WIDE FLANGE STEEL EL 149'-10" U.N.O. AT 5th FLOOR
4. ⟷ INDICATES SPAN DIRECTION OF 8" PRECAST PRESTRESSED HOLLOW CORE PLANK W/ACOUSTIC MAT & NON-STRUCTURAL TOPPING (SEE ARCH)
5. FIN FLOOR EL 132'-0" AT 3rd FLOOR
FIN FLOOR EL 141'-4" AT 4th FLOOR
FIN FLOOR EL 150'-8" AT 5TH FLOOR



T/STEEL 225'-7 3/8"
T/STEEL 225'-6"
T/STEEL 225'-0"
T/STEEL 225'-8"
W12x19
W18x40
BF-1
W18x35
W16x26
W18x46
W18x60
W18x86
W18x55 (+8)
W21x44
W18x71 (+8)
W12x26
W12x14
W16x26 (+8)
W8x18
W8x31 (+8)
W18x76
W18x175
DB8x35
HSS6x4x1/2
HSS5x5x1/4 (ABOVE)
W10 (ABOVE)
HSS8x4x1/4
NO PLANK @ THIS LOCATION
SLOPE DOWN
STAIR OPENING
ELEVATOR
MOMENT FRAME MF-1