

GENERAL NOTES

- DESIGN DATA:
a.) Applicable Code: 2009 International Building Code
b.) Design Loads
1. Roof Loads:
Self Weight
Collateral - Primary
Collateral - Secondary
Live Loads (0-200 square feet)
Live Loads (200-800 square feet)
Live Loads (> 800 square feet)
2. Elevated Floor Loads: Not Applicable
3. Wind Loads:
Basic Wind Speed
Wind Importance Factor (iw)
Building Occupancy Category
Wind Exposure Class
Internal Pressure Coefficient (Cpfi)
Components and Cladding (Non-Professional Design)
Wind Pressure - Walls
Wind Pressure - Roof
4. Seismic:
Seismic Importance Factor (Ie)
Seismic Use Group
Mapped Spectral Response Acceleration
Spectral Response Coefficients
5. Roof Snow:
Ground Snow Load (Pg)
Flat Roof Snow Load (Ps)
Snow Exposure Factor (Ce)
Snow Load Importance Factor (Is)
Thermal Factor (CT)
6. Rain Loads: Not Applicable
SOIL PROPERTIES:
a.) Allowable Soil Bearing:
Isolated Foundations
Continuous Foundations
c.) Frost Depth
CONCRETE:
a.) Concrete at interior slabs on grade shall have a minimum compressive strength of 3,500 psi at 28 days unless noted.
b.) Design and construction shall conform to the "Building Code Requirements for Structural Concrete - ACI 318-05 - Strength Design Method"
c.) Concrete subject to freezing and thawing shall have maximum water-cement (w/c) ratio of 0.50.
d.) Concrete for interior slabs-on-grade shall have coarse aggregates graded such that no more than 18 percent nor less than 8 percent of the total aggregate is retained on the 3/4", 1/2", 3/8" and number 4 sieves.
REINFORCING STEEL:
a.) All reinforcing steel to be ASTM A615 Grade 60.
b.) All reinforcing steel shall conform with CRSI Standards.
c.) Reinforcing steel shall have development lengths and splice lengths as shown in the following tables unless otherwise shown on the drawings.
Table 1: Bar Size vs. 3,000 psi Concrete Development Length (inches)
Table 2: Bar Size vs. 4,000 psi Concrete Development Length (inches)
d.) Unless otherwise shown the clear cover for reinforcing bars shall be:
1) Walls exposed to ground or weather: 2"
2) Walls and footings placed on the ground without forms: 3"
3) Beams, columns, and piers: 2"
e.) Results for all concrete compressive tests shall be available on the jobsite for review by the inspector.

- MASONRY:
a.) Concrete masonry units shall be hollow load bearing units ASTM C-90 Grade N-1 with a net strength of 2,000 psi and f'm of 1,500 psi.
b.) Mortar shall comply with ASTM C-270 Type M or S.
c.) Truss type masonry joint reinforcement shall be installed in all masonry walls at a maximum spacing of 16 inches center to center. Use prefabricated L's and T's at corners and intersections. Lap reinforcement a minimum of 12 inches.
d.) All concrete fill placed in cells shall be 2,500 psi pea gravel concrete. Maximum height of placement is 4'-0". Fill must be consolidated by mechanical vibration.
e.) Provide minimum reinforcing (per ACI 530)
#4 Vertical at - each side of opening
and wall (continuous)
#4 Horizontal at - bottom and top of opening
and deck bearing (continuous)
bottom of wall (continuous)
SPECIAL INSPECTIONS:
a.) Engaging the Special Inspectors
The owner or architect must engage special inspectors to perform special inspections. These inspectors must be submitted to the structural engineer for consideration.
b.) Steel Fabricator
The steel fabricator shall maintain written procedural and quality control manuals. The steel fabricator must be engaged with an approved special inspection agency that is performing periodic audits of the steel fabricator's operations. Upon completion of fabrication, the fabricator shall furnish a "certificate of compliance" to the building official stating that the work was performed in accordance with approved construction documents.
c.) Special Steel Inspector
The special steel inspector must be a AWS D11 Certified Welding Inspector (CWI) and an ASNT TC1A Level Two Certified Technician.
d.) Submittal of Field Welding Information
The steel erector must submit the welding materials, welding procedures, and welder qualifications to the special inspector for his approval. This approval must be made prior to any steel erection.
e.) Periodic Inspection of Field Welds
The special inspector must provide periodic inspection of:
• 10% of all field
• 10% of all field welds of cold formed steel members.
Should any welds, other than deck welds, be found to be inadequate, then 100% of all similar welds must be inspected at the expense of the subcontractor. Inadequate deck welds shall be corrected and reported to the structural engineer prior to covering the welds to determine additional testing requirements. Periodic inspections shall be visual inspections unless noted on drawings or specifications.
f.) Continuous Inspection of Field Welds
The special inspector must be present and provide continuous inspection of:
• All fillet welds exceeding 5/16" size
• All multi-pass fillet welds
• All complete and partial penetration welds
Continuous inspections shall be visual inspections unless noted on drawings or specifications.
g.) High Strength Bolts (A325 or A490)
The special inspector shall provide a "measuring device" (skidmore) and schedule the bolting technique verification with the special inspector. The special inspector shall observe the pre-installation testing and calibration procedures. The erector shall use the turn-of-nut method, "molemarking" techniques, direct tension indicator washers, or alternate fasteners to tension the bolts. During this pre-installation testing, the steel inspector shall obtain calibrated torque wrench values for later inspection.
The special inspector must utilize a calibrated torque wrench to inspect the following:
• Confirmation of adequate soil condition
• Verification of the use of the design mix
• Sample fresh concrete as indicated in the specifications
h.) Concrete Foundations
The special concrete inspector shall inspect all foundations. This inspection shall include:
• confirmation of adequate soil condition
• verification of the use of the design mix
• sample fresh concrete as indicated in the specifications
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The special concrete inspector shall inspect all foundations. This inspection shall include:
• confirmation of adequate soil condition
• verification of the use of the design mix
• sample fresh concrete as indicated in the specifications
j.) Slabs on Grade
The special concrete inspector shall inspect all slabs on grade. This inspection shall include:
• verification of adequate soil condition by observation of proof rolling
• verification of the use of the design mix
• sample fresh concrete as indicated in the specifications
k.) Elevated Slabs on Composite Deck
The special concrete inspector shall inspect all elevated slabs on composite deck. This inspection shall include:
• sample fresh concrete as indicated in the specifications
• verification of the use of the design mix
• inspection of curing techniques & temperature control techniques
l.) Structural Slabs
The special concrete inspector shall inspect all structural slabs. This inspection shall include:
• reinforcing steel size and placement
• verification of the use of the design mix
• sample fresh concrete as indicated in the specifications
• inspection of curing techniques & temperature control techniques
m.) Contractor's Statement of Responsibility.
The contractor responsible for any work requiring special inspection shall submit a written statement to the prime design professional for submittal throughout project, unless otherwise acceptable to Engineer.
• acknowledging the awareness of special requirements
• acknowledging that control will be exercised to obtain conformance with construction documents
• defining procedures for exercising control
• identifying the persons exercising control and stating their qualifications
n.) Structural Observations
A professional engineer employed by Freland Harris Consulting Engineers shall visit the project during the construction to confirm general compliance with the design intent.

SECTION 03100

CONCRETE WORK

PART 1 - GENERAL

- 1.1 DESCRIPTION
A. Work Included: Extent of concrete work is shown on drawings.
B. Related Work
1. Documents effecting work of this Section include, but are not limited to: General Conditions, Supplementary Conditions, and Division 1 of these Specifications.
1.2 QUALITY ASSURANCE
A. Codes and Standards: Comply with provisions of following codes, specifications and standards, 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"
B. Concrete Testing Services
1. Engage a testing laboratory acceptable to Engineer to perform material evaluation tests and to design concrete mixes.
2. Engineer will engage testing laboratory to perform sampling and testing during placement of concrete. Engineer will engage a testing laboratory to conduct tests of compression test specimens.
3. Materials and installed work may require testing and retesting as directed by Engineer, at any time during progress of work. Allow free access to material storage piles and facilities. Re-testing of rejected materials and installed work shall be done at Contractor's expense.

- 1.3 SUBMITTALS
A. Product Data: Submit data for proprietary materials and items, including reinforcing and forming accessories, admixtures, patching compounds, joint systems, curing compounds, and others as required by Engineer.
B. Shop Drawings - Reinforcement: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 318 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, placement, location, and arrangement of concrete reinforcement. Include special reinforcement required at openings through concrete structures.
C. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test as specified.
D. Material Certificates: Provide material certificates in lieu of materials laboratory test reports when permitted by Engineer. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

- 2.1 FORM MATERIALS
A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal-faced plywood, form or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Formwork shall be constructed to minimize number of joints and to conform to joint system shown on drawings. Prevent form material with sufficient thickness to withstand pressure of newly placed concrete without bowing or excessive deflection. Comply with U. S. Product Standard PS-1 "Formwork (Concrete Form) Plywood, Class E" or Grade or better, mill-glued and edge-glued, with each piece bearing legible inspection trademark.
B. Form Coatings: Provide commercial formulation form-releasing compound that will not bond with, and will not adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.
C. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to produce uniform concrete placement, and to prevent spilling on forms at inconspicuous locations.
D. Chanfer: Expunge corners and edges as indicated, using wood, metal, PVC or rubber chanfer strips fabricated to produce uniform smooth lines and tight edge joints.
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H. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, and provide chases and forms providing such items. Accurately place and securely support items built into forms.
I. Cleaning and Tightening: Thoroughly clean forms and surfaces before placement of concrete. Remove all dirt, mud, sand, dust, or other debris just before concrete is placed. Brighten and polish metal formwork concrete placement as required to eliminate mortar leaks and maintain proper alignment.

- 2.2 REINFORCING MATERIALS
A. Reinforcing Bars: ASTM A615, Grade 60, deformed.
B. Welded Wire Fabric: ASTM A185, welded steel wire fabric.
C. Supports for Reinforcement: Provide supports for reinforcing bars, including bolsters, chairs, spacers, and other devices for spacing, supporting and fastening reinforcement bars and ties. Supports shall be made of wire bar type supports complying with CRSI specifications, unless otherwise acceptable.
2.3 CONCRETE MATERIALS
A. Portland Cement: ASTM C150, Type I, unless otherwise acceptable to Engineer. Use one brand of cement throughout project, unless otherwise acceptable to Engineer.
B. Fly Ash: ASTM C618, Type C or Type F. Loss on ignition shall not exceed 3.12%. Limit use of Fly Ash to not exceed 20% of cement content by weight.
C. Normal Weight Aggregate: ASTM C33, and as herein specified. Provide aggregates from a single source for exposed concrete.
D. For exterior exposed surfaces, do not use fine or coarse aggregates containing soil-caking or deleterious substances.
E. Water: Drinkable.
F. Admixtures: The amount of water soluble chloride ions added to the concrete shall not exceed 0.10% by weight of cement. Provide admixture manufacturer's written certification of weight of added chloride ions per sack for each admixture.
1. Air-Entraining Admixture: ASTM C260
2. Water-Reducing Admixture: ASTM C494, Type A
3. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C494, Type F or Type G
4. Water-Reducing, Non-Chloride Accelerator Admixture: ASTM C494, Type E
5. Water-Reducing, Retarding Admixture: ASTM C494, Type D
2.4 RELATED MATERIALS
A. Moisture Barrier: Provide moisture barrier cover over prepared base material where indicated. Use only materials which are resistant to decay when tested in accordance with ASTM E36, as follows:
1. Polyethylene sheet not less than 10 mils thick.
B. Non-Shrink Grout: FRB-C 621, Factory pre-mixed liquid.
C. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C309, Type I, Class A with W solids not less than 30%. Moisture loss not more than 0.03 gr./sq. in. when applied at 300 square ft./gal.
D. Bonding Compound: Polyvinyl acetate or acrylic base, rewaterable type.
E. Isolation Joint (expansion joint)
1. Provide preformed strips, non-extruding and resistant to moisture, type of thickness indicated, complying with ASTM D1751.
2. If seals specified in the Seals and Caulking Section are used in the joints but under this Section, Contractor will provide a filler complying with ASTM E2282.

- 2.5 PROPORTIONING AND DESIGN OF MIXES
A. Prepare design mixes for each type and strength of concrete as follows:
1. Prepare concrete mixes, other than slab on grade concrete in accordance with ACI 308 Section 3.9
2. Prepare slab on grade concrete mixes in accordance with ACI 308 Section 5.2.4 (Method B).
B. Submit written reports to Engineer of each proposed mix for each class of concrete at least 10 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Engineer.
C. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
1. 4000 psi 28-day compressive strength
2. 3000 psi 28-day compressive strength
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 Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in work.

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C. Normal Weight Aggregate: ASTM C33, and as herein specified. Provide aggregates from a single source for exposed concrete.
D. For exterior exposed surfaces, do not use fine or coarse aggregates containing soil-caking or deleterious substances.
E. Water: Drinkable.
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2. Water-Reducing Admixture: ASTM C494, Type A
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4. Water-Reducing, Non-Chloride Accelerator Admixture: ASTM C494, Type E
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D. Bonding Compound: Polyvinyl acetate or acrylic base, rewaterable type.
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2. If seals specified in the Seals and Caulking Section are used in the joints but under this Section, Contractor will provide a filler complying with ASTM E2282.

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CONCRETE WORK

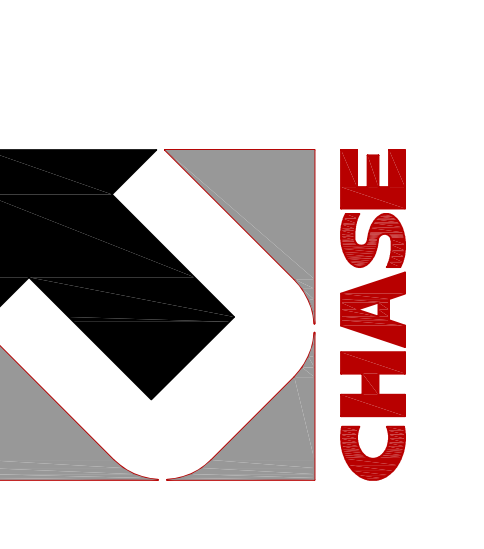
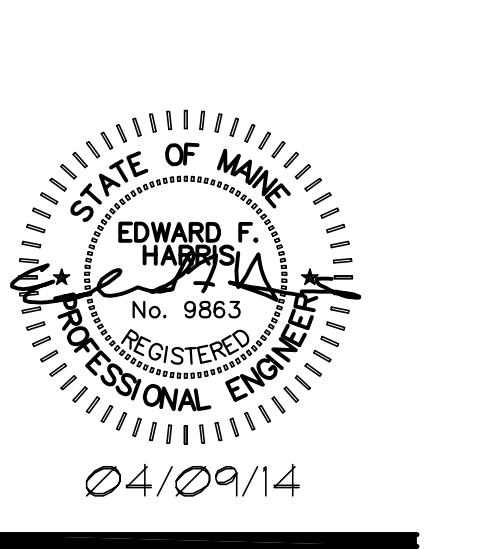
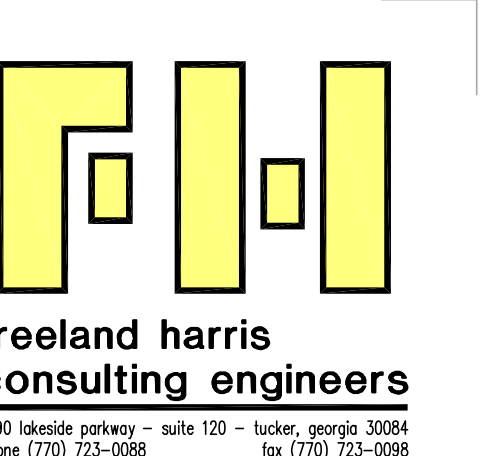
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A. Work Included: Extent of concrete work is shown on drawings.
B. Related Work
1. Documents effecting work of this Section include, but are not limited to: General Conditions, Supplementary Conditions, and Division 1 of these Specifications.
1.2 QUALITY ASSURANCE
A. Codes and Standards: Comply with provisions of following codes, specifications and standards, 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"
B. Concrete Testing Services
1. Engage a testing laboratory acceptable to Engineer to perform material evaluation tests and to design concrete mixes.
2. Engineer will engage testing laboratory to perform sampling and testing during placement of concrete. Engineer will engage a testing laboratory to conduct tests of compression test specimens.
3. Materials and installed work may require testing and retesting as directed by Engineer, at any time during progress of work. Allow free access to material storage piles and facilities. Re-testing of rejected materials and installed work shall be done at Contractor's expense.

- 1.3 SUBMITTALS
A. Product Data: Submit data for proprietary materials and items, including reinforcing and forming accessories, admixtures, patching compounds, joint systems, curing compounds, and others as required by Engineer.
B. Shop Drawings - Reinforcement: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 318 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, placement, location, and arrangement of concrete reinforcement. Include special reinforcement required at openings through concrete structures.
C. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test as specified.
D. Material Certificates: Provide material certificates in lieu of materials laboratory test reports when permitted by Engineer. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

- 2.1 FORM MATERIALS
A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal-faced plywood, form or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Formwork shall be constructed to minimize number of joints and to conform to joint system shown on drawings. Prevent form material with sufficient thickness to withstand pressure of newly placed concrete without bowing or excessive deflection. Comply with U. S. Product Standard PS-1 "Formwork (Concrete Form) Plywood, Class E" or Grade or better, mill-glued and edge-glued, with each piece bearing legible inspection trademark.
B. Form Coatings: Provide commercial formulation form-releasing compound that will not bond with, and will not adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.
C. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to produce uniform concrete placement, and to prevent spilling on forms at inconspicuous locations.
D. Chanfer: Expunge corners and edges as indicated, using wood, metal, PVC or rubber chanfer strips fabricated to produce uniform smooth lines and tight edge joints.
E. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to produce uniform concrete placement, and to prevent spilling on forms at inconspicuous locations.
F. Chanfer: Expunge corners and edges as indicated, using wood, metal, PVC or rubber chanfer strips fabricated to produce uniform smooth lines and tight edge joints.
G. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to produce uniform concrete placement, and to prevent spilling on forms at inconspicuous locations.
H. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, and provide chases and forms providing such items. Accurately place and securely support items built into forms.
I. Cleaning and Tightening: Thoroughly clean forms and surfaces before placement of concrete. Remove all dirt, mud, sand, dust, or other debris just before concrete is placed. Brighten and polish metal formwork concrete placement as required to eliminate mortar leaks and maintain proper alignment.

- 2.2 REINFORCING MATERIALS
A. Reinforcing Bars: ASTM A615, Grade 60, deformed.
B. Welded Wire Fabric: ASTM A185, welded steel wire fabric.
C. Supports for Reinforcement: Provide supports for reinforcing bars, including bolsters, chairs, spacers, and other devices for spacing, supporting and fastening reinforcement bars and ties. Supports shall be made of wire bar type supports complying with CRSI specifications, unless otherwise acceptable.
2.3 CONCRETE MATERIALS
A. Portland Cement: ASTM C150, Type I, unless otherwise acceptable to Engineer. Use one brand of cement throughout project, unless otherwise acceptable to Engineer.
B. Fly Ash: ASTM C618, Type C or Type F. Loss on ignition shall not exceed 3.12%. Limit use of Fly Ash to not exceed 20% of cement content by weight.
C. Normal Weight Aggregate: ASTM C33, and as herein specified. Provide aggregates from a single source for exposed concrete.
D. For exterior exposed surfaces, do not use fine or coarse aggregates containing soil-caking or deleterious substances.
E. Water: Drinkable.
F. Admixtures: The amount of water soluble chloride ions added to the concrete shall not exceed 0.10% by weight of cement. Provide admixture manufacturer's written certification of weight of added chloride ions per sack for each admixture.
1. Air-Entraining Admixture: ASTM C260
2. Water-Reducing Admixture: ASTM C494, Type A
3. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C494, Type F or Type G
4. Water-Reducing, Non-Chloride Accelerator Admixture: ASTM C494, Type E
5. Water-Reducing, Retarding Admixture: ASTM C494, Type D
2.4 RELATED MATERIALS
A. Moisture Barrier: Provide moisture barrier cover over prepared base material where indicated. Use only materials which are resistant to decay when tested in accordance with ASTM E36, as follows:
1. Polyethylene sheet not less than 10 mils thick.
B. Non-Shrink Grout: FRB-C 621, Factory pre-mixed liquid.
C. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C309, Type I, Class A with W solids not less than 30%. Moisture loss not more than 0.03 gr./sq. in. when applied at 300 square ft./gal.
D. Bonding Compound: Polyvinyl acetate or acrylic base, rewaterable type.
E. Isolation Joint (expansion joint)
1. Provide preformed strips, non-extruding and resistant to moisture, type of thickness indicated, complying with ASTM D1751.
2. If seals specified in the Seals and Caulking Section are used in the joints but under this Section, Contractor will provide a filler complying with ASTM E2282.

- 2.5 PROPORTIONING AND DESIGN OF MIXES
A. Prepare design mixes for each type and strength of concrete as follows:
1. Prepare concrete mixes, other than slab on grade concrete in accordance with ACI 308 Section 3.9
2. Prepare slab on grade concrete mixes in accordance with ACI 308 Section 5.2.4 (Method B).
B. Submit written reports to Engineer of each proposed mix for each class of concrete at least 10 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Engineer.
C. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
1. 4000 psi 28-day compressive strength
2. 3000 psi 28-day compressive strength
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 Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in work.



CONTRACTOR: D.F. Chase
3001 ARKORY DR
SUITE 225
NASHVILLE, TN 37204



Office Renovation & Dock Addition :
OLD DOMINION FREIGHT LINE
ODFL PORTLAND, ME
185 RAND ROAD,
PORTLAND, ME 04102

Check Sheet 03-26-14
Construction Dwgs 04-09-14
For Permit 04-21-14
Revisions 07-01-14
Revisions 07-09-14

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GENERAL NOTES, SCHEDULES AND SPECIFICATIONS
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