

City of Portland, Maine - Building or Use Permit Application

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

Permit No: 04-0172		Issue Date:	CBL: 015 E012001
Location of Construction: 105 North St	Owner Name: Ckt Inc	Owner Address: Po Box 427 1	Phone: 207-774-5358
Business Name: n/a	Contractor Name: n/a	Contractor Address:	Phone:
Lessee/Buyer's Name n/a	Phone: n/a	Zone: R6	
Past Use: Multi Family / 3 Units	Proposed Use: 3 Units / Replace 10' x 43' x 48' x 10' roof top deck.	Permit Fee: \$246.00	Cost of Work: \$25,000.00
Proposed Project Description: Replace 10' x 43' x 48' x 10' roof top deck. <i>legal use: 3 dwelling units -</i>		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied	INSPECTION: Use Group <i>2</i> Type <i>SB</i> <i>REPLACEMENT DECK</i> <i>3/2/04</i>
		Signature <i>[Signature]</i>	Signature <i>[Signature]</i>
		PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)	
		Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied	
		Signature: _____ Date: _____	

Permit Taken By: gg	Date Applied For: 02/26/2004	Zoning Approval		
1. 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..	Special Zone or Reviews <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/>	Zoning Appeal <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied	Historic Preservation <input checked="" type="checkbox"/> Not in District or Landmark <input type="checkbox"/> Does Not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied	
	Date: <i>3/5/04</i>		Date: <i>[Signature]</i>	

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	

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK CITY OF PORTLAND

BUILDING DEPARTMENT

Please Read Application And Notes, If Any, Attached

PERMIT

Permit Number: 040172

This is to certify that Ckt Inc /n/a
has permission to Replace 10' x 43' x 48' x 10' top deck
AT 105 North St 015 E012001

PERMIT ISSUED
JUL 22 2004
CITY OF PORTLAND

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, 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.

Notification of inspection must be given and written permission procured before this building or part thereof is altered or closed-in.
48 HOUR 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. [Signature]
Health Dept. _____
Appeal Board _____
Other _____
DepartmentName _____

[Signature] 7/21/04
Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit

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

Permit No: 04-0172	Date Applied For: 02/26/2004	CBL: 015 E012001
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Location of Construction: 105 North St	Owner Name: Ckt Inc	Owner Address: Po Box 427 1	Phone: 207-774-5358
Business Name: n/a	Contractor Name: n/a	Contractor Address: n/a Portland	Phone:
Tenant/Lessee/Buyer's Name: n/a	Phone: n/a	Permit Type: Alterations - Multi Family	

	Proposed Project Description: Replace 10' x 43' x 48' x 10 roof top deck.
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Dept: Zoning	Status: Approved with Conditions	Reviewer: Marge Schmuckal	Approval Date: 03/05/2004
Note:			Ok to Issue: <input checked="" type="checkbox"/>
1) This is NOT an approval for an additional dwelling unit. You SHALL NOT add any additional kitchen equipment including, but not limited to items such as stoves, microwaves, refrigerators, or kitchen sinks, etc. Without special approvals.			
2) This property shall remain a three (3) family dwelling. Any change of use shall require a separate permit application for review and approval.			
3) This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.			

Dept: Building	Status: Approved with Conditions	Reviewer: Mike Nugent	Approval Date: 07/21/2004
Note:			Ok to Issue: <input checked="" type="checkbox"/>
1) The ceiling of the unit below must be made accesible to confirm that the structural repairs indicated by the design professional occurred. VERY IMPORTANT!!!			

Dept: Fire	Status: Approved	Reviewer: Lt. MacDougal	Approval Date: 03/08/2004
Note:			Ok to Issue: <input checked="" type="checkbox"/>

Comments:
3/11/2004-mjn: Need much more information left a message with applicant RECEIVED

Book Page

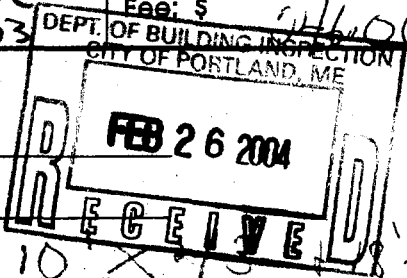
TD 15-E-12

178-19

0-4 0172

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.

N	
Total Square Footage of Proposed Structure 610'	Square Footage of Lot
Tax Assessor's Chart, Block & Lot Chart# 01 Block# I Lot# 012	Owner: CKT Inc.
	Telephone: 734-5358
Lessee/Buyer's Name (If Applicable)	Applicant name, address & telephone: Lee Flanigan 49 Westminister Ave Portland, Me. 04103
	cost Of Work: \$25,000. ⁰⁰ Fee: \$ 4400
Current use: Rental Property (3-Unit)	
If the location is currently vacant, what was prior use: —	
Approximately how long has it been vacant: —	
Proposed use: replace roof top deck Project description:	10 x 15 x 10
Contractor's name, address & telephone:	
Who should we contact when the permit is ready: Lee W Flanigan	
Mailing address: 49 Westminister Ave. Portland me. 04103	
We will contact you by phone when the permit is ready. You must come in and pick up the permit and review the requirements before starting any work, with a Plan Reviewer. A stop work order will be issued and a \$100.00 fee if any work starts before the permit is picked up. PHONE: 207-415-8807	

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 APPROVE THIS PERMIT.

igan



SWIFT ENGINEERING
331 Main Street, Norway, ME 04268
Consulting Structural Engineers

April 30, 2004

Better Homes Construction
49 Westminister Ave.
Portland, ME 04103

RE: 105 North Street Deck

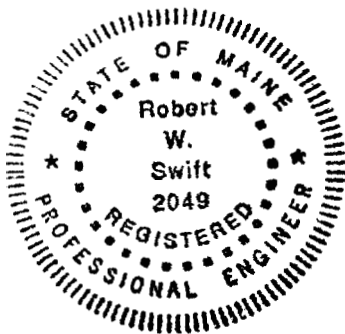
Dear Lee:

After looking **at** the deck on Wednesday, I find that the deck, as built, exceeds the capacity of the roof joists below. Attached is sketch for transferring the deck load into the **wall below**. When this work is done, the structure **is** adequate **for** supporting **the** deck load.

Sincerely,

Robert W Swift, P.E.

ext. 102



SWIFT ENGINEERING

331 Main Street
NORWAY, MAINE 04268
(207)743-5885
FAX (207)743-9525

JOB 105 NORTH ST., PORTLAND

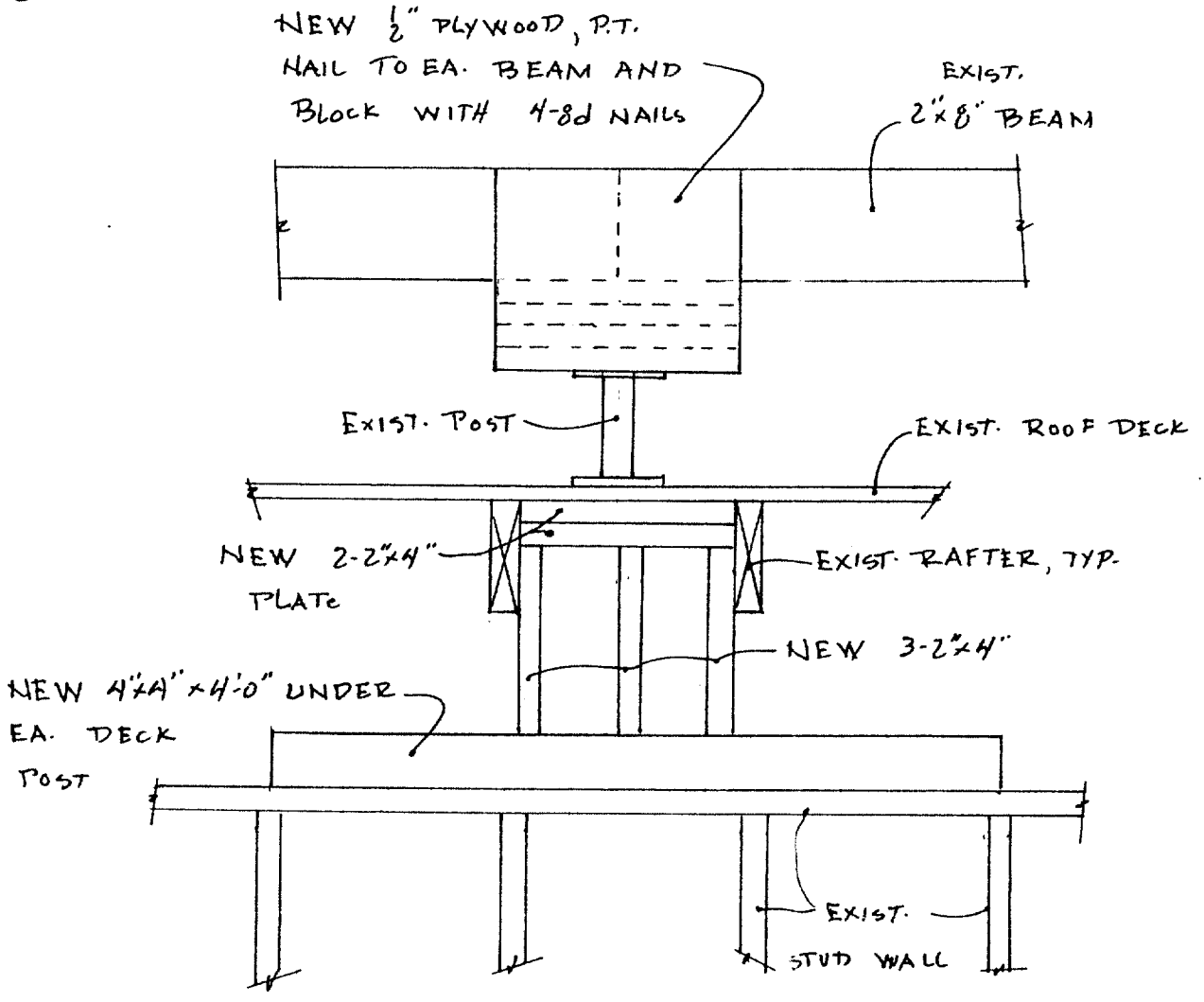
SHEET NO. 1 OF 1

CALCULATED BY RWS DATE 4-30-04

CHECKED BY _____ DATE _____

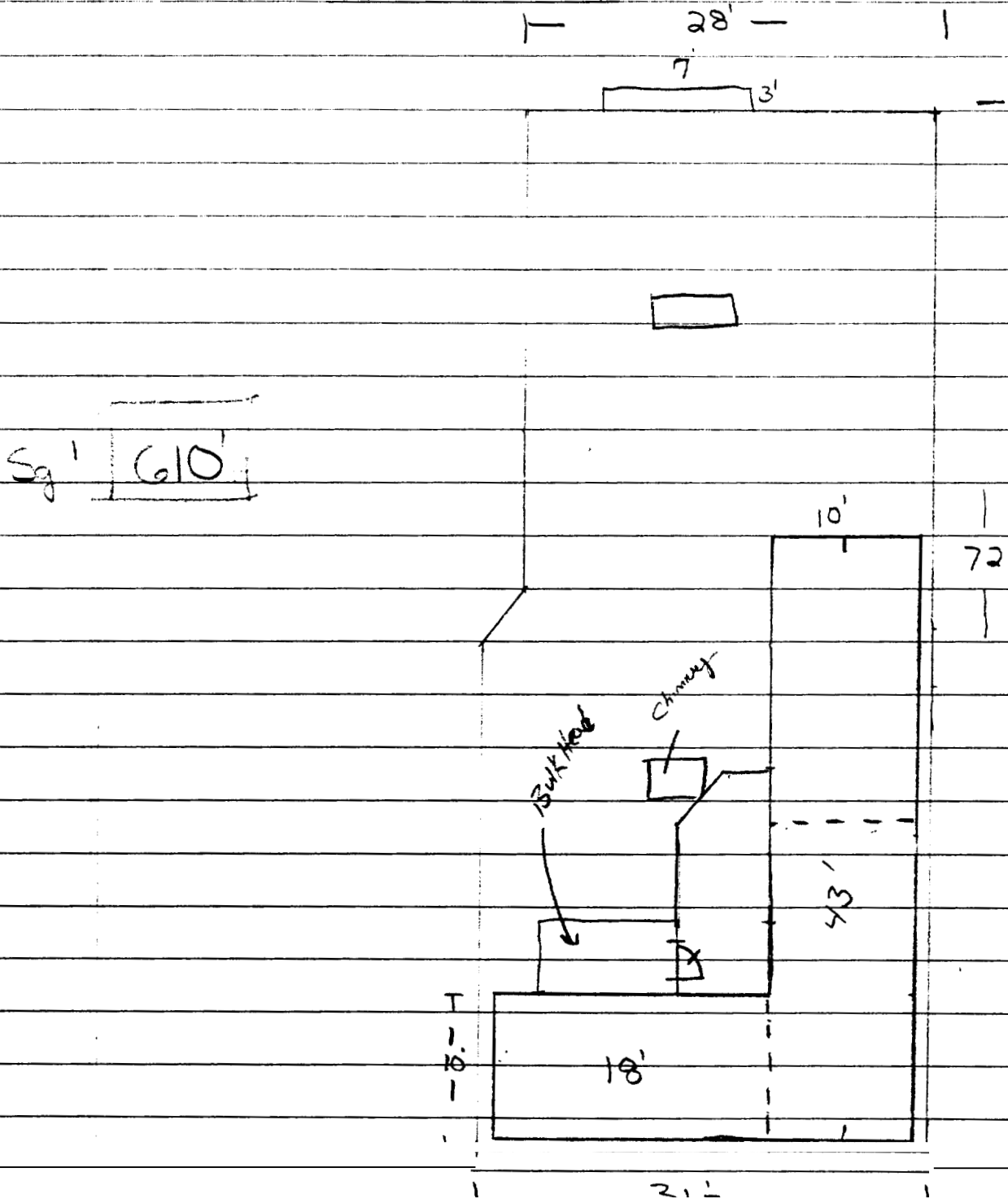
SCALE _____

8d



North St

Floor Plan



Construction Detail

Frame

FrameWork

Box 2" x 8" P.T.

Joist 2" x 8" P.T.

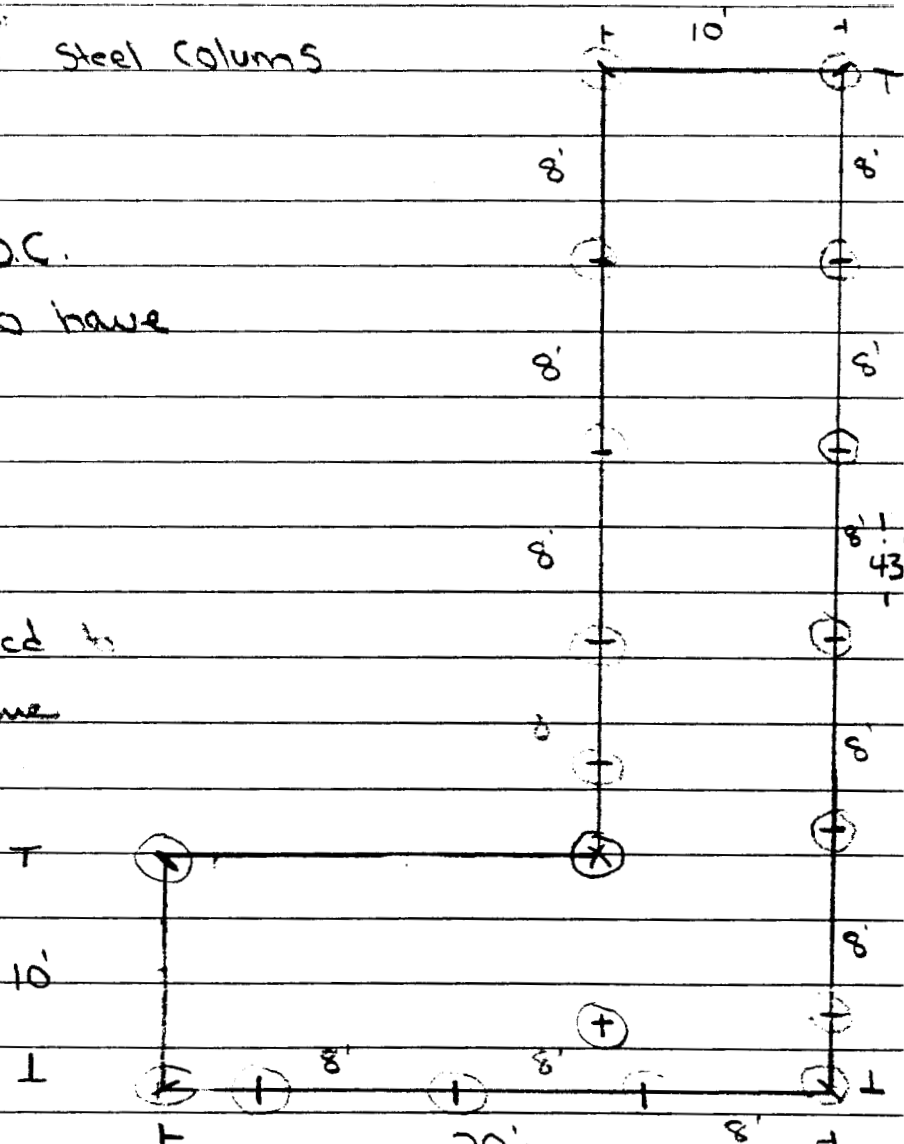
Post 2" Steel Columns

Joist are 16" O.C.

All joist are to have hangers.

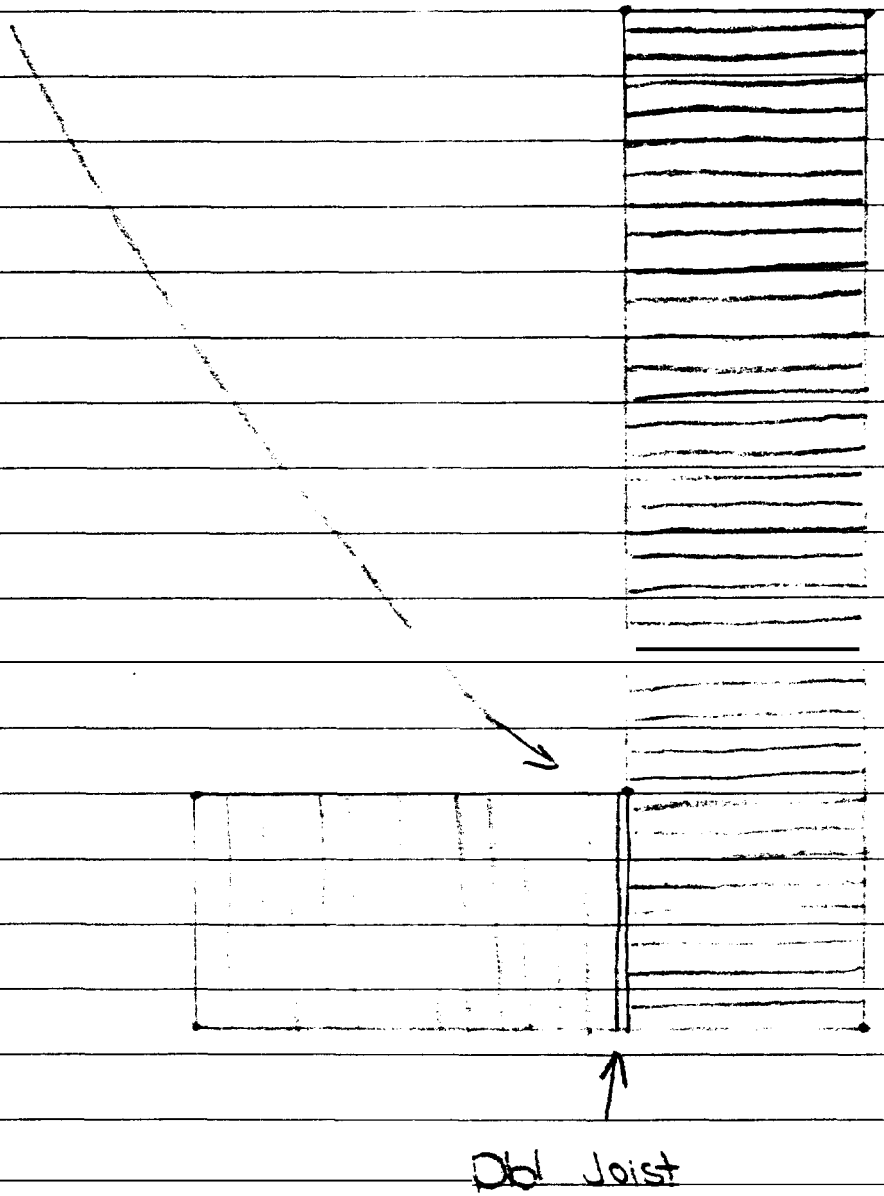
⊗ indicates column

Column to be lagged to roof top and frame work.



Detail

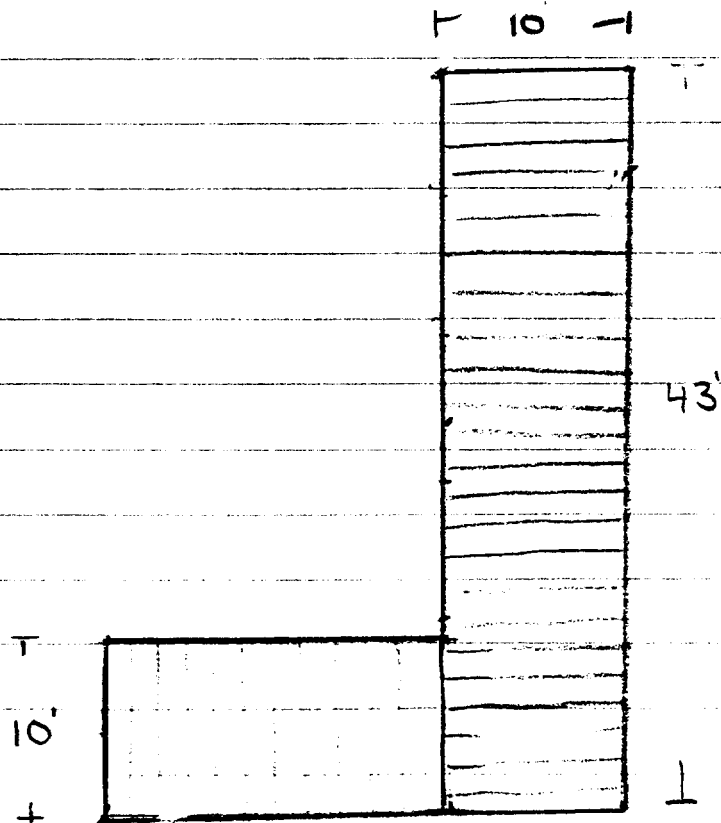
Double Joist at intersection
of Frames.



Construction Detail

Decking is to be composite material capable of 16 OC framework spacing.

Decking is to be screwed down.

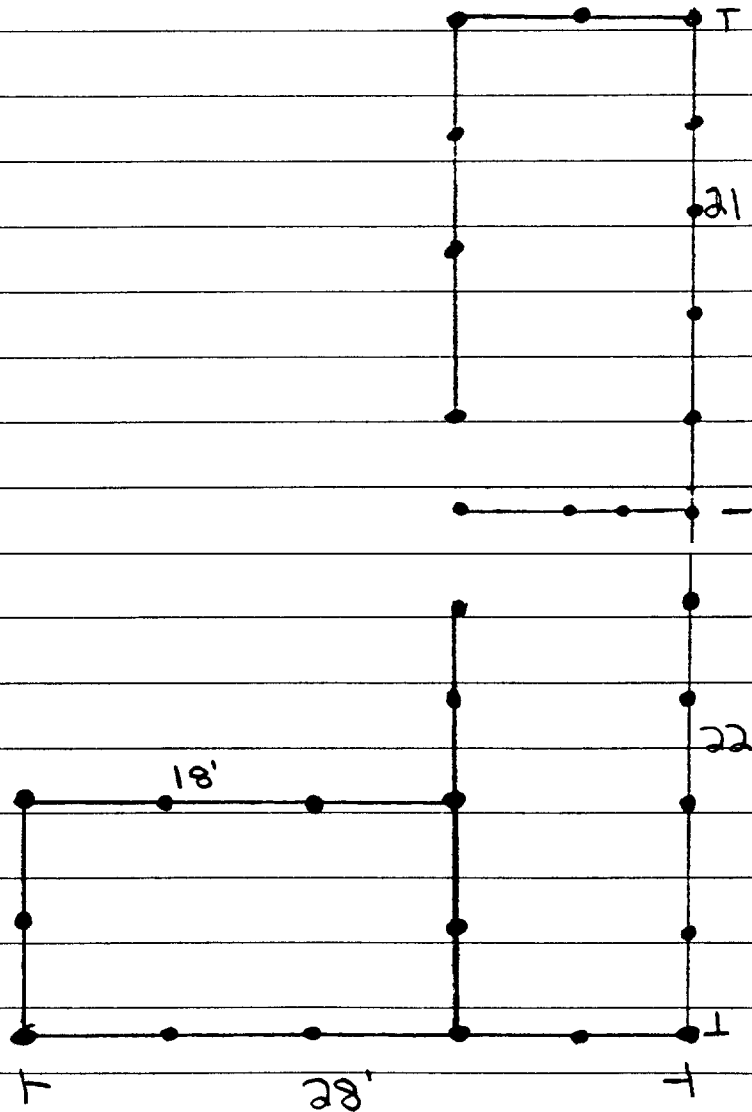


Hand Rail

Railings are to be
42" tall.

Posts are to be no
greater than 6'
apart.

Entrance is to be
48".



LEE FLANIGAN

January 30,2004

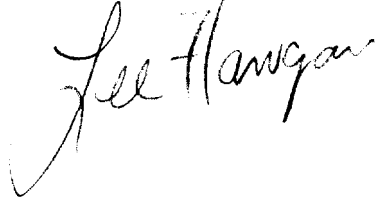
City of Portland

Re: replacement of roof top decks

The following project is for work to be done at 105 North St. Portland Me.. We would like to replace the existing roof top decks with new ones. The decks now consist of three individual structures located at the rear of the building. The foot print for each is 10'x 20' 10'x 21' and 10'x 18'. The existing railings are all but non-existent and access is gained to all decks by walking on the roof which also allows access to the whole roof. The new decks will be constructed in the same foot print but built as one large deck with 42" hand rails separating the decks into three separate areas. Also the access to the decks will be a platform made from decking material with handrails so that no access from the entrance door to the decks will allow any unauthorized persons to gain access to the rest of the roof top. The deck frame work will be constructed of pressure treated 2" x 8". The frame work will be no greater than 16" O.C.. The decking will be a composite material. The hand rails will be PVC and Aluminum 42" tall with less than 6' spacing from post to post. The deck frame work will also be attached to the roof with 4 4" lag bolts at each post with a span no greater than 8'.

Thank you

Lee Flanigan ...

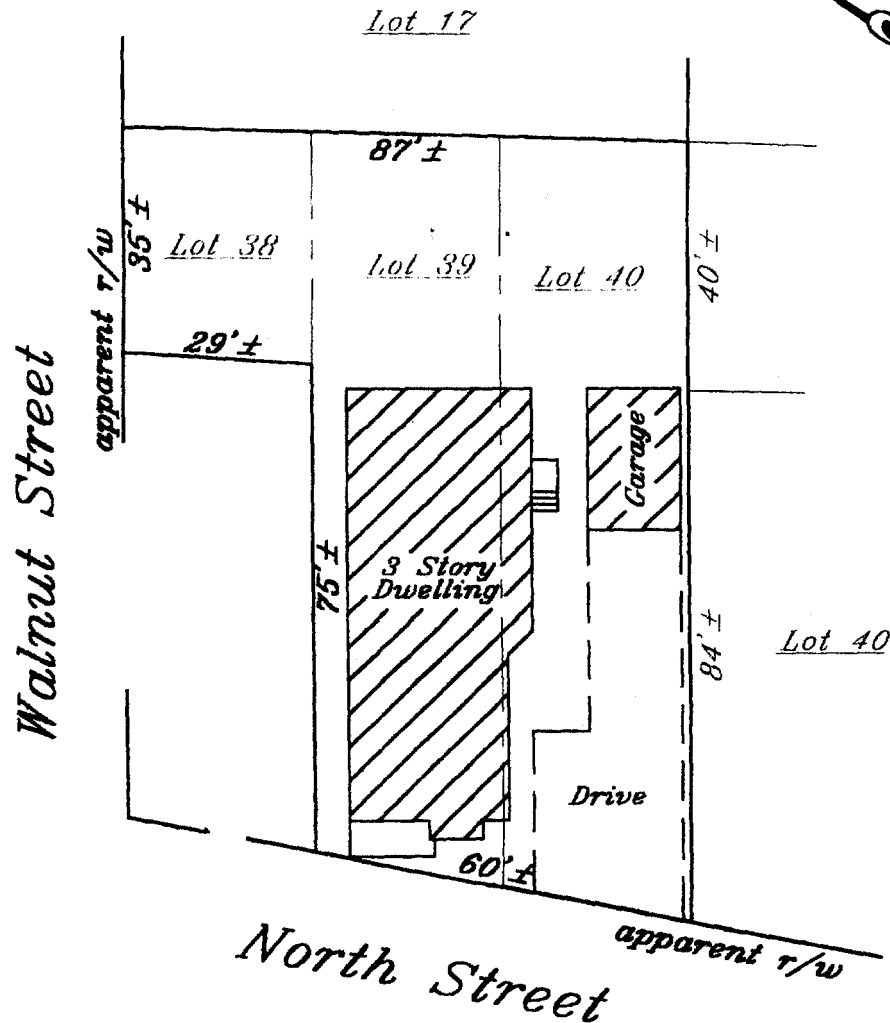
A handwritten signature in black ink that reads "Lee Flanigan". The signature is written in a cursive style and is positioned below the typed name and three dots.

FOR MORTGAGE LENDER USE ONLY

General Notes: (1) Distances shown are taken from provided title references shown below. (2) The purpose of this inspection is to render an opinion as follows: A) Dwelling and accessory structure's compliance with respect to municipal zoning setbacks, and B) flood zone determination by horizontal scaling on the below referenced FEMA map. (3) This inspection excepts out all technical standards set forth by state of Maine Board of Licensure For Professional Land Surveyors. (4) This inspection is to be used only by the below listed lender, title attorney & title insurer and should not be used by another party for boundary line location or land title opinions. (5) A Boundary Survey should be performed to render a professional opinion pertaining to boundary line location.

Address: 105 North Street
Portland, Maine

Inspection Date: 2-6-02
Scale: 1" = 30'



See title references for appurtenances.

Applicant: Toothaker CRT, Inc Requesting Party: Leete & Lemieux, P. A.
 Owner: Estes & Piergrass Attorney: James R. Lemieux
 Lender: _____ Your File: 104538

File # 20211338 Field Book: 255-38

Title References: 17816 119
 Deed Book: _____ Page: _____
 Plan Book: 1 Page: 41
 County: Cumberland

Lot: 39, 40 P/038

Nadeau & Lodge, Inc.
 Professional Land Surveyors
91A Brighton Avenue 11 Depot Street Box 610

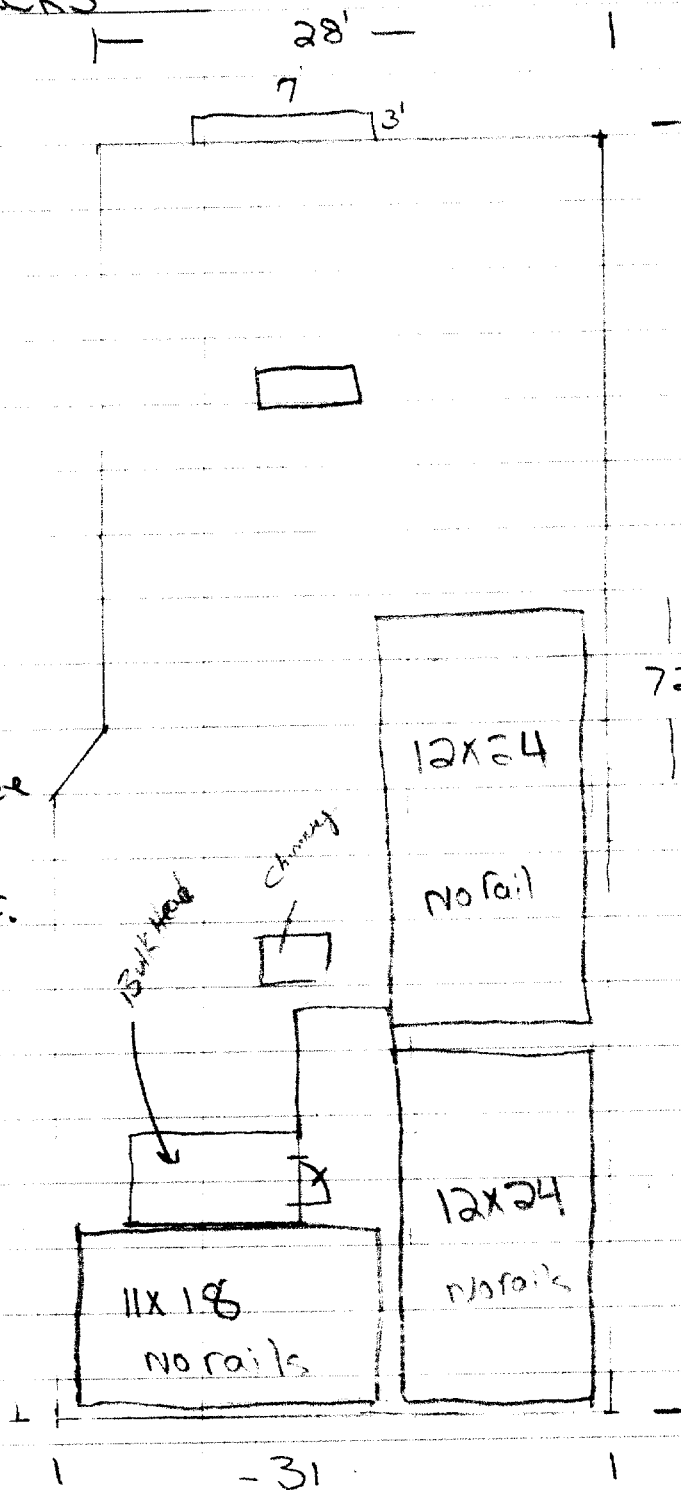
North St.

Existing Decks

5' 6" / 6' 10"

These decks were mere platforms made of a 2x6 frame and laid free on the roof. No Hand rails.

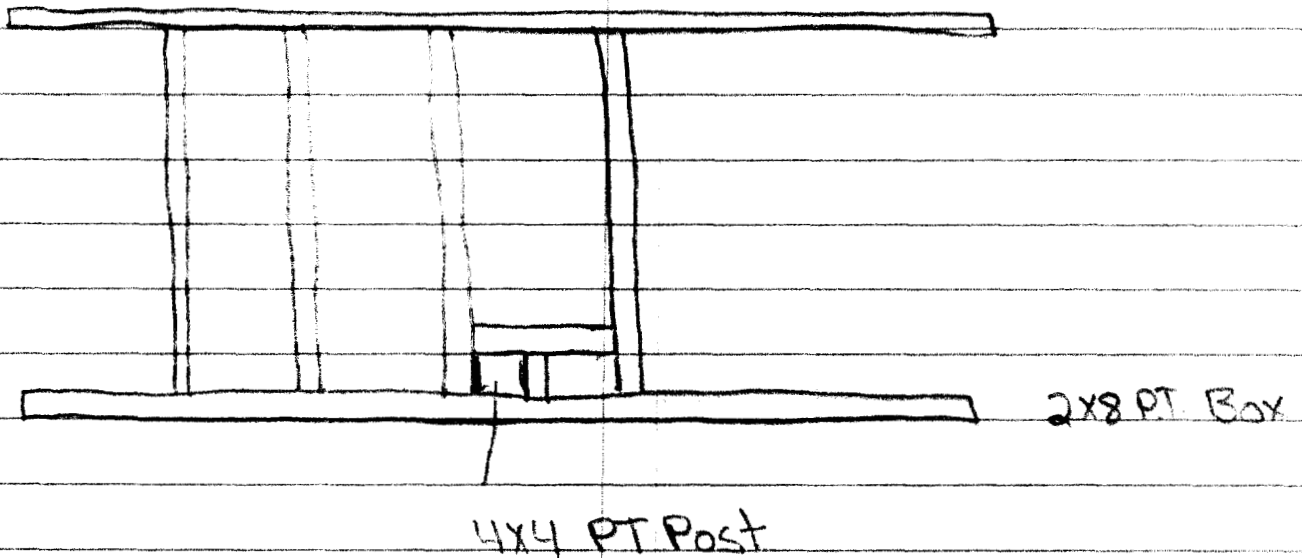
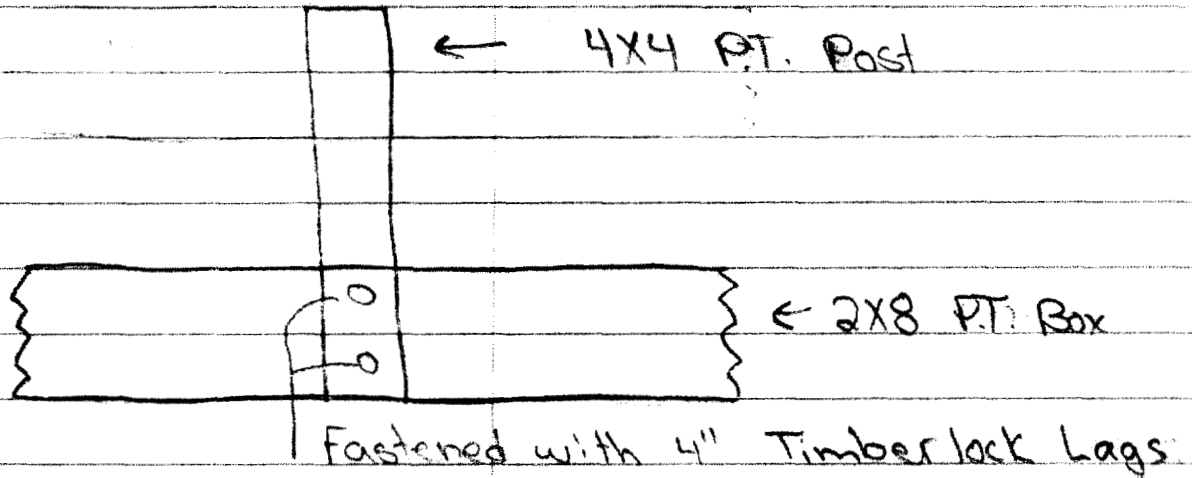
~~The~~



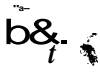
JUL 20 2021

RECEIVED

Hand Rail Post Detail



4x4 Post are boxed in with 2x8 P.T. and
Fastened with 4" Timber lock Lags.



SECTION 05720 ORNAMENTAL HANDRAILS & RAILINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Kroy PVC ornamental handrail and railing systems.
- B. Related Sections: Section(s) related to this section include:
 - 1. Division 6 Section: Woods and Plastics
 - a. 06510- Structural Plastic Shapes and Plates
 - b. 06520- Plastic Structural Assemblies
 - c. 06600- Plastic Fabrications

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM D256 Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - 2. ASTM D638 Standard Test Method for Tensile Properties of Plastics.
 - 3. ASTM D648 Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
 - 4. ASTM D792 Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
 - 5. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - 6. ASTM D4216 Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly (Vinyl Chloride)
 - 7. (CPVC) Building Products Compounds.
 - 8. ASTM E985 Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.
 - 9. ASTM F964 Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Exterior Profiles Used for Fencing.
- B. Building Officials and Code Administrators (BOCA):
 - 1. BOCA Evaluation Report 21-38: Section 06500 Kroy Vinyl Railing System
 - 2. BOCA National Building Code, 1999.

1.03 DEFINITIONS

- A. General: Definitions in ASTM E985 for railing related terms apply to this section.
- B. Posts: Vertical structure support members of the rail system.
- C. Rails: Horizontal structural support members of the railing system.
- D. Pickets: Vertical members between the bottom and top rails.
- E. Aluminum Channel: Structural supports inside rails.

F. Post Mounts: Vinyl or aluminum structural supports inside of posts or sheet.

1.04 SYSTEM DESCRIPTION

A. Structural Performance of Handrails and Railing Systems: Engineer, fabricate and install handrails and railing systems to withstand the following structural loads without exceeding the allowable design working stress of the materials for handrails, railing systems, anchors and connections. Apply each load to produce the maximum stress in each of the respective components comprising handrails and railing systems.

1. Top Rail of Guardrail Systems: Capable of withstanding the following loads applied as indicated with a safety factor of 2.5:
 - a. Concentrated design load of 200 lb (890 N) applied at any point and in any direction.
 - b. Uniform load of 50 plf (75 kg/m) applied horizontally and concurrently with a uniform load of 100 plf (149 kg/m) applied vertically downward.
 - c. Concentrated and uniform loads shall not be applied simultaneously.
2. Handrails Not Serving as Top Rails: Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lb (890 N) applied at any point and in any direction.
 - b. Uniform load of 50 plf (75 kg/m) applied in any direction.
 - c. Concentrated and uniform loads shall not be applied simultaneously.
 - d. Compliant with ADA.
3. Infill Area of Guardrail Systems: Capable of withstanding a horizontal concentrated load of 200 lb applied to a 1 sq ft (976 kg/m²) area at any point in the system, including panels, intermediate rails, balusters or other elements composing the infill area.
 - a. Above load need not be assumed to act concurrently with loads on top rails of railing systems in determining stress on guardrail.

1.05 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract.
- B. Product Data: Submit product data for specified products.
- C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories and finish colors. Include details showing fabrication and installation of handrails and railings, including plans, elevations, sections, details of components and attachments to other units of work, if required.

- D. Samples: Submit selection and verification samples for finishes and colors.
1. Samples for initial selection purposes should be in the form of manufacturer's color chip samples showing the full range of colors available for those units with factory applied color finishes.
 2. Samples should be provided for verification purposes of each type of exposed finish required, prepared on components indicated below that are of the same thickness and metal indicated for final unit of work. Where finishes involve normal color and texture variations, include sample sets showing the full range of variation expected.
 - a. 18" (457 mm) long sections of each distinctly different linear railing member, including handrails, top rails, posts and balusters.
 - b. Fittings and brackets.
- E. Quality Assurance Submittals: Submit the following:
1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties. Include copies of selected test reports by independent laboratories verifying the compliance of railing components and systems with applicable building codes upon request.
 2. Compliance Reports: Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction that provide evidence polyvinyl chloride railing systems are in compliance with applicable building code in effect for project.
 3. Certificates: Product certificates signed by the manufacturer certifying that materials comply with specified performance characteristics and criteria and physical requirements.
 4. Manufacturer's Instructions: Manufacturer's installation instructions.
 5. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
- F. Closeout Submittals: Submit the following:
1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
 2. Warranty: Warranty documents specified herein.

1.06 QUALITY ASSURANCE

A. Qualifications:

1. Polyvinyl Chloride Railing Fabricator/Installer Qualifications: Engage a Kroy Building Products licensed fabricator to ensure successful completion of project.
2. Obtain PVC guardrail accessories, fittings and fasteners from a Kroy Building Products approved source to ensure consistent quality standards are maintained throughout the project.
 - a. Certificate: When requested, submit certificate indicating qualifications.
3. Manufacturer Qualifications: Manufacturer should be capable of providing field service representation during construction and should be capable of approving acceptable installer and application methods.

1.07 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to material handling damage and accumulation of dirt and grime, at temperature and humidity conditions recommended by manufacturer. Handle and store product according to Kroy recommendations. Store in original packaging whenever possible until components are required on the project.

1.08 PROJECT CONDITIONS

- A. Field Measurements: Verify actual measurements and openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

Specifier Note: Coordinate Article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section.

1.09 WARRANTY

- B. Project Warranty: Refer to Conditions of the Contract for project warranty provisions used with their permission. The manufacturer is responsible for technical accuracy.
- C. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

PART 2 - PRODUCTS

2.01 PVC C HANDRAILS AND RAILING SYSTEMS

Specifier Note: Vinyl handrails are becoming popular choices for architects and builders on residential and light commercial projects of many types. Vinyl railing products are intended to provide safe, decorative and low maintenance components for use as a railing on steps, porches and decks. Kroy's vinyl products will not rot, rust, chip, flake or corrode. They are low maintenance and will withstand harsh weather conditions, including temperature changes and intense ultraviolet light.

A. Manufacturer: Kroy Building Products, Inc.

1. Contact: **2719** Division Avenue, **P.O. Box 636**, York, NE **68467-0636**;
Telephone: (888) **289-5769**, (402) **362-1212**; Fax: (800) **933-5769**.
2. Contact: **15159** Andrew Jackson Highway **76 W**, Fair Bluff, NC 28439
Telephone: (887) **543-5769**, (910) **649-7501**; Fax: (910) **649-7371**

Specifier Note: Kroy vinyl products are manufactured from **100%** new vinyl. The base ingredient is rigid PVC (polyvinyl chloride) homopolymer compound with a high level of titanium dioxide pigment for long-term UV resistance and impact modifiers for strength. The formulation is similar to that of vinyl siding and windows, which have more than **20** years of proven long-term durability and structural integrity. The profiles are free from visible cracks, holes, foreign inclusions or other defects. They are uniform in color, capacity and density. Cost: The initial material cost of vinyl is slightly higher than wood. However, due to virtually no maintenance or replacement cost, enhanced property value and the manufacturer's limited lifetime warranty, the life cycle cost is much lower than alternative materials. Budget installed cost information may be obtained from a local licensed Kroy distributor. Product information is available for over 100 styles of railing. For technical assistance, contact a licensed Kroy fabricator or Kroy Building Products, Inc.

B. Proprietary Product(s)/System(s): Kroy PVC Angular Railing Systems.

1. Post Profile Types and Sizes: As indicated on drawings and as follows:

- a. 4" x 4" x 0.17" (102 x 102 x 4.3 mm) wall.
 - b. **5" x 5" x 0.15" (127 x 127 x 3.8 mm)** wall.
 - c. 5" x 5" x 0.20" (127 x 127 x 5.1 mm) wall.
 - d. 6 1/2" x 6 1/2" x 0.17" (165 x 165 x 4.3 mm) wall.
2. Rails Profile Types and Sizes: **As** indicated on drawings and as follows:
- a. 1" x 3 1/2" (25.4 x 89 mm) decorative cap rail.
 - b. 1 3/4" x 3 1/2" (44 x 89 mm).
 - c. 2" x 3 1/2" (51 x 89 mm) rib and open.
 - d. 2 1/4" x 3" (57 x 76 mm) contoured.
 - e. 2 1/2" x 4 1/2" (64 x 114 mm) contoured.
 - f. 3" x 3" (76 x 76 mm).
 - g. 1 1/2" x 5 1/2" (38 x 140 mm) rib.
3. Pickets Profile Types and Sizes: **As** indicated on drawings and as follows:
- a. 1 1/2" (38 mm) octagon.
 - b. 1 7/8" (48 mm) octagon.
 - c. 1" x 1" (25.4 x 25.4 mm).
 - d. 1 3/8" x 1 3/8" (**35 x 35 mm**).
 - e. 1 3/4" x 1 3/4" (44 x 44 mm).
 - f. 1 1/4" x 1 1/2" (32 x 38 mm).
 - g. 3/4" x 1 1/2" (19 x 38 mm).
 - h. 1" x 2" (25.4 x 51 mm).
 - i. 7/8" x 3" (22.2 x 76 mm).
 - j. 1 1/2" x 1 1/2" (38 x 38 mm) molded spindle.
 - k. 1 1/2" x 1 1/2" (38 x 38 mm) molded baluster
 - l. 2" x 2" (51 mm x 51 mm) molded baluster.
4. Structural Post and Post Sleeves:
- a. 4" x 4" Contoured Structural Post
 - b. 5" x 5" Contoured Structural Post
 - c. 4" x 4" x 0.135 wall – wood 4x4 post sleeve
 - d. 6 1/2" x 6 1/2" x 0.170 wall – wood 6x6 post sleeve
 - e. 4" x 4" post cladding for wood 4x4 post
 - f. 6 1/2" x 6 1/2" post cladding for wood 6x6 post
5. Caps Profile Types and Sizes: **As** indicated on drawings and as follows
- a. Sizes:
 - 1) 4" x 4" (102 x 102 mm).
 - 2) 5" x 5" (127 x 127 mm).
 - 3) 6 1/2" x 6 1/2" (165 x 165 mm).
 - b. Styles:
 - 1) Ball: [4" x 4" (102 x 102 mm)] [5" x 5" (127 x 127 mm)].
 - 2) Classic Manor: [4" x 4" (102 x 102 mm)] [5" x 5" (127 x 127 mm)] [6 1/2" x 6 1/2" (165 x 165 mm)].

- 3) Gothic: [4" x 4" (102 x 102 mm)] [5" x 5" (127 x 127 mm)].
- 4) Pyramid: [4" x 4" (102 x 102 mm)] [5" x 5" (127 x 127 mm)].

Specifier Note: Edit Paragraph below. Kroy PVC Handrail and Railing Systems offer its 5" x 5" (127 x 127 mm) post towers in various lengths. Revise Paragraph below to suit project requirements and specifier's practice.

- 6. Mounting Components Types and Sizes: As indicated on drawings and as follows:
 - a. 2" x 3 1/2" (51 x 89 mm) external wall and post bracket with trim.
 - b. 2" x 3 1/2" (51 x 89 mm) stair bracket with trim.
 - c. 2" x 3 1/2" (51 x 89 mm) internal wall and post bracket.
 - d. 4" x 4" (102 x 102 x 762 mm) internal post tower (residential and commercial).
 - e. 4" x 4" (102 x 102 x 762 mm) post side mount tower.
 - f. 5" x 5" (127 x 127 x [Specify.] mm) post tower.
 - g. 2 1/4" x 3" (75 x 76 mm) external wall and post bracket with trim.
 - h. 2 1/4" x 3" (75 x 76 mm) stair bracket.
 - i. 2 1/2" x 4 1/2" (64 x 114 mm) external wall and post bracket with trim.
 - j. 45 degree bracket adapter
 - k. 22.5 degree bracket adapter
 - l. Round column bracket adapter
 - m. Fluted column bracket adapter
- 7. Aluminum Reinforcements Types and Sizes: As indicated on drawings and as follows:
 - a. 3" (76 mm) flat ribbed insert for 1" x 3" (25.4 x 76 mm) cap rail.
 - b. P-channel for 2" x 3" (51 x 76 mm) open rail.
 - c. 2 1/4" x 3" (57 x 76 mm) for 2 1/4" x 3" (57 x 76 mm) contoured.
 - d. 2 1/2" x 4 1/2" (64 x 114 mm) for 2 1/2" x 4 1/2" (64 x 114 mm) contoured.
 - e. H-channel for 3" x 3" (76 x 76 mm) open rail.
- 8. Miscellaneous Types and Sizes: As indicated on drawings and as follows:
 - a. Classic Manor base trim:
 - 1) 4" x 4" (102 x 102 mm).
 - 2) 5" x 5" (127 x 127 mm).
 - 3) 6 1/2" x 6 1/2" (165 x 165 mm).

Specifier Note: Foot block system is designed for spans greater than 6' (1.8 m).

- b. Foot Block System.

- 9. Finishes: Smooth, **soft** gloss.

10. Colors: Titanium dioxide is the main ultraviolet light inhibitor in the PVC material used to manufacture these products. Since it is a white pigment, dark colors limited in practicality. Decorative cap rails are available with a selection of architectural accent colors in high performance polymer.

- a. Rails: White, tan, gray, or khaki (khaki available in 2" x 3 1/2" rails only)
- b. Posts: White, tan, gray, or khaki (khaki available in 4" x 4" and 5" x 5" posts only)
- c. Pickets: White, tan, gray, or khaki (khaki available in 1 3/8" x 1 3/8" pickets only)
- d. Decorative cap rails: green, blue, cranberry, grey, white, and tan.

11. ADA Compliant Continuous Hand Rail System Components:

- a. 1 1/2" OD Vinyl Tubing
 - 1) 1 1/2" OD vinyl hand rail with aluminum insert: 6', 8', or 10"
 - 2) 1 1/2" OD vinyl hand rail w/o aluminum insert: 6', 8', or 10' lengths
 - 3) 1 1/2" OD ADA endloop: 18" x 12" x 18"
 - 4) 1 1/2" OD 90 degree wall return: 12" x 2 3/4"
 - 5) 1 1/2" OD 90 degree comer: 12" x 12"
 - 6) 1 1/2" OD 90 degree comer endpost: 12" x 36"

Specifier Note: Can be installed as a long comer to reduce joints or used with post interiors to create a return to grade end post.

- b. Inserts
 - 1) Aluminum Insert 1 1/2" O.D. rails: 6', 8', 10'
 - 2) 30" flange post interior.

Specifier Note: Mounts to wood or concrete surfaces using lag screws or concrete anchors.

- 3) 34" core post interior: galvanized steel

Specifier Note: Used for core mount applications in masonry surfaces.

- 4) Adjustable internal joiner.
- 5) 1 1/2" diameter vinyl end cap.
- 6) Flange cover: 3 1/2" x 3 1/2"

- c. Mounting Brackets

- 1) White Powder Coated hand rail bracket kit: set of two
- 2) 1 1/2" mini wall mount flange: aluminum

Specifier Note: Used to terminate straight rail at wall surface.

- d. Accessories

- 1) 4" x 4" post sleeve centering bracket
- 2) 4" x 4" turned post centering bracket
- 3) Cleaner buffing compound.

Specifier Note: Use by hand or with machine wheel buffers to polish vinyl railing products.

- 12. Product(s)/System(s) Testing:** Provide PVC railing system that complies with the following physical/chemical properties:
- a. ASTM **D256** - Izod Impact greater than 5 ft lb/in (2.1 N•m/m) at **23** degrees C.
 - b. ASTM **D638** - Tensile Strength **6290** psi (**43** MPa).
 - c. ASTM **D638** - Tensile Modulus **430,000** psi (**2963** MPa).
 - d. ASTM **D648** - Deflection Temperature **67** degrees C.
 - e. Railing was tested according to procedures outlined in the National Building Code (BOCA), ASCE **7**, Uniform Building Code (ICBO) and the Standard Code (SBCCI). Railing systems shall withstand basic **200** lb (**890** N) design load requirements for handrails and guardrails. System also shall meet requirements for **2** times the design load for handrails and guardrails. Selected Kroy railing systems have been independently tested to withstand a 600 lb (**2670** N) concentrated load test that may be required for some commercial applications.

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

Specifier Note: Edit Article below. Select types and sizes set forth in Article **2.01**. Stainless steel or galvanized fasteners should be of sufficient size and strength to support local code requirements.

2.03 MATERIALS

- A. Kroy PVC Hand Rail and Rail System Materials:
1. General: Posts, rails, balusters, pickets, post caps and brackets shall comply with ASTM **D4216**, Class **143354311122**.
 2. Posts: One piece extruded square profile: [Specify type and size].
 3. Rails: One piece extruded angular profile: [Specify type and size].
 4. Rails: One piece extruded decorative cap rail profile: [Specify color].
 5. Picket/Balusters: One piece extruded profile: [Specify type or size].
 6. Post Caps Molded: Specify to fit the selected post profile.
 - a. Sizes: [**4" x4" (102 x 102 mm)**] [**5" x 5" (127 x 127 mm)**].
 - b. Styles: [Ball] [Classic Manor] [Gothic] [Pyramid].
 7. Mounting Components: [Specify type or size].

8. Aluminum Reinforcement Insert: [Specify type or size].
9. Miscellaneous Component: [Specify type or size].
10. ADA Compliant Continuous Hand Rail System Components:
 - a. 1 ½ OD components: [Specify]
 - b. Inserts:[Specify]
 - c. Brackets:[Specify]
 - d. Accessories:[Specify]
11. Fasteners: [Specify].

Specifier Note: Edit Paragraph below. Retain or delete to meet project requirements and specifier's practices.

- B. Mounting Types:
 1. Post Socket:
 - a. Mounting Configuration: **4" x 4"** (102 x 102 mm) residential only.
 - b. Surfaces: [Wood] [Concrete] [Brick].
 - c. Mounting Type: [Through bolts] [Concrete wedge anchors] [Epoxy bolts].
 2. Post Tower: Residential and Commercial:
 - a. Configuration: [Surface mounted configuration] [Side mounted configuration].
 - b. Surfaces: [Wood] [Synthetic composite decking] [Membranes] [Fiberglass decking] [Concrete] [Brick].

2.05 RELATED MATERIALS

- A. Related Materials: Refer to other sections listed in Related Sections Paragraph herein for related materials.
- B. Adhesive, Grout and Anchor Cement:
 1. Adhesive: PVC based adhesive with the same UV properties as Kroy railing system.
 - a. Christy's
 2. Nonshrink, Nonmetallic Grout: Premixed, factory packaged, nonstaining, noncorrosive, nongaseous grout complying with CE CRD-C-621. Provide grout specifically recommended by manufacturer for exterior applications of type specified in this section.
 3. Products: Subject to compliance with requirements, provide 1 of the following:
 - a. "Euco N-S Grout"; Euclid Chemical Co.
 - b. "Sealtight **588** Grout"; W. R. Meadows, Inc.
 - c. "SonogROUT"; Sonneborn Building Products Div., ChemRex, Inc.

- d. "Five Star Grout"; **U.S.**Grout Corp.
- e. "Quik-Rok", OR Inc., Melville. NY.

2.06 FABRICATION

- A. General: Fabricate handrails and railing systems to comply with requirements indicated for design, dimensions, details, finish and member sizes, including wall thickness, but not less than those required to support structural loads.
 - 1. Fabricated at a Kroy licensed dealer and, if practical, preassemble rail sections prior to transporting to jobsite. Fabrication includes, but is not limited to, cutting, routing and drilling components in accordance with engineering drawings, specifications or Kroy CAD details for railing sections.
 - 2. Brackets, Flanges, Fittings and Anchors: Provide manufacturer's standard brackets, mounts and anchors for assembly and mounting of rail system.
 - 3. Fabricate with galvanized steel or aluminum inserts as necessary for handrails and railing systems capable of withstanding loads required by handrails and railing systems applications/location.

2.07 SOURCE QUALITY

- A. Source Quality: Obtain PVC railing system products from a single Kroy Building licensed dealer or approved source.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation or design drawings.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with that manufacturer's instructions.

3.03 PREPARATION

- A. Surface Preparation: [Specify applicable product preparation requirements.].

3.04 INSTALLATION

- A. Railing System Installation:

1. Ensure mounting surface and substructure are structurally capable of supporting railing system and application loads (dead and live load).
2. Utilize Kroy authorized crews when possible.
3. Install guardrail in application shown in compliance with manufacturer's written instructions.
4. During installation, PVC components shall be carefully handled and stored to avoid contact with abrasive or damaging surfaces.
5. Install components in sequence recommended by the manufacturer.
6. Install guardrail or handrail as indicated on the drawings provided.
7. Post Support Components: To be attached to concrete surfaces or wood structure using hardware recommended by Kroy dealer following all recommended manufacturer installation instructions as indicated in drawings.
8. If application or code requires, insert galvanized steel or aluminum inserts into rails prior to assembly in accordance with Kroy Instructions or detail drawings.
9. When mounting stair railing, hole elongation will be necessary to accommodate the appropriate angle of the stairs.
10. Install post caps with appropriate PVC adhesive.
11. Install ADA Compliant Continuous Hand Rail System where applicable:
 - a. Prior to installation, check all local building code requirement that may apply to the application
 - b. Using a level and tape measure, lightly mark location of the top of the handrail onto the wall or post, at the mounting position and run the chalk line from top to bottom. (For most applications the top of the hand rail would be 34"-38" above the nose of the stair tread or standing surface.)
 - c. Mark the mounting locations for the aluminum hand rail brackets on the wall or posts at the appropriate height, using a piece of 1" scrap hand rail material. Make the top of the hand rail consistent at all locations marked in the above step.
 - d. Mount the aluminum handrail brackets to the mounting surface with fasteners best suited for your application.
 - e. Remove all aluminum insert. Cut and fit the 1 1/2" vinyl to follow the layout. Starting at the top of the handrail installation and working towards the bottom, "dry" assemble the various PVC hand rail components.

- f. Label all PVC components and carefully remove. Cut all aluminum inserts to match the appropriate lengths.
 - g. All mitered joints will require an adjustable internal joiner. To secure, adjust joiner to match desired angle of application and tighten screws firmly. Next, apply vinyl adhesive to the inside of both end of the 1 ½ PVC and lightly apply to both ends of the joiner piece. Finally press joiner and 1 ½ PVC together.
 - h. Once all the components are glued and temporarily clamped to brackets, secure the finished handrail assembly to the brackets using the provided fasteners.
 - i. Check hand rail for overall length adding additional brackets as needed to achieve desired strength.
- C. Site Tolerances: [Specify applicable site tolerances for specified product(s) installation.].
- D. Related Products Installation: Refer to other sections listed in Related Sections Paragraph herein for related materials installation.

3.05 FIELD QUALITY REQUIREMENTS

- A. Site Tests [Installation and Post-Installation Testing]: [Specify applicable test requirements to be performed during and/or after product installation.].
- B. Inspection: [Specify applicable product inspection requirements to be performed after product installation.].

Specifier Note: Edit Paragraph below. Establish number and duration of periodic site visits with Owner and manufacturer, and specify below. Consult with manufacturer for services required. Coordinate Paragraph below with Division 1 Quality Assurance Section and Part 1 Quality Assurance Submittals herein. Delete if manufacturer's field service is not required.

- C. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- 1. Site Visits: [Specify number and duration of periodic site visits.].

3.07 CLEANING

Specifier Note: Kroy PVC fencing, deck and rail materials offer very low maintenance. They never need painting and are not subject to deterioration. These assemblies will get dirty just as any other product exposed to atmospheric conditions. An occasional pressure washing or cleaning with a long-handled soft-bristle brush of the type used to wash cars may be all that is necessary. If dirt is hard to remove, wipe down the PVC with a solution

of 1 cup Simple Green to 1 gallon of water. Tide, Spic 'n Span or other household detergent may also be used. For stubborn stains, consult the manufacturer's literature.

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace products that have been installed and are damaged. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

END OF SECTION