

CARTA DE TRAMITE

Para: Departamento de Educación
Dr. Eligio Hernández Pérez
Secretario de Educación

De: ROV Engineering Services PSC
100 Road 165 Suite 203 CIM Tower 1 Guaynabo, PR 00968
787-230-7171
Víctor M. Rodríguez Ortiz, P.E., CPIA, CPIU



Escuela: **Bonifacio Alvarado**

Código: **(12518)**

Municipio: **Orocovis**

Fecha de:
Inspección **16-Jan-20**

Nombre del Ingeniero que emite la recomendación: **Ing. William Green**

Anejos:

1. Recomendación al Secretario.
2. Estampilla Digital Especial emitida por el CIAPR.
3. Informe de inspección Ocular.

OCULAR INSPECTION CHECKLIST

Where description is indicated, attach additional pages of notes and photographs keyed to appropriate checklist item.

A. GENERAL INFORMATION

1. Street Address of the School: Carr 143, #42.7 Bo. Bermejales
 City: Orocovis State: Puerto Rico Zip: 00720
2. School Name: Bonifacio Alvarado
3. Date of inspection: 16-enevo-2020
4. Inspector's Name: William Green

B. BUILDING SITE INSPECTION

5. Utility Service Safety:

IMPORTANT—Immediately following an earthquake, check the entire property, especially near appliances, for the smell of gas. If gas odor is detected, turn off the gas at the meter where it enters the building. Locate and repair leaks before turning gas back on. If the gas odor persists after the gas has been shut off, vacate the building and contact the gas utility company immediately.

IMPORTANT—Before entering a damaged, vacant building verify that gas is off. Check the gas meter for damage and position of main gas valve, either a manual valve or a seismically-activated gas shut-off valve. Do not enter the building if gas odor is detected.

- a. Odor of gas leakage? YES NO b. Downed powerlines? YES NO

6. Surrounding topography: (check one)

- Flat
- Gently sloping (easily walkable)
- Steeply sloping (difficult or impossible to walk in some areas)

7. Building pad: (check one)

- Flat
- Terraced or multilevel
- Gently sloping (less than 4-foot ground surface elevation difference across building)
- Steeply sloping (greater than 4-foot ground surface elevation difference across building)

8. Geotechnical Issues: (if yes, provide description and photos)

- | | YES | NO |
|---|--------------------------|-------------------------------------|
| a. New cracks in the ground? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. Signs of fresh cracking in or movement of hardscape? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c. Signs of fresh cracking in or movement of retaining walls? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d. Patterns of cracking that extend through the ground surface, hardscape, and improvements? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e. Evidence of sand boils or other fresh-appearing deposits of sand or mud? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f. Unusual slumping, rising, or bulging of the ground surface? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g. Evidence of rock falls or slope instability above site? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| h. Ground movement or wet areas indicating possible broken underground utility lines? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| i. Other phenomena (e.g., septic tanks surfacing, differential settlement, ground consolidation)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

OCULAR INSPECTION CHECKLIST

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B. BUILDING SITE INSPECTION (continued)

YES

NO

9. Evidence of earthquake-induced permanent ground deformation in the immediate vicinity of the property?

C. GENERAL BUILDING INFORMATION

10. Safety Assessment Tag: (check one)

 None Green Yellow Red

(others):

 Yellow Red

11. a) Year of original construction (best estimate): +50

b) Total square footage (best estimate): _____

YES

NO

12. Have any repairs, modifications, or demolition been performed since the earthquake?

If yes, describe _____

13. Building configuration:

- a. Single story
 b. Combination one and two story
 c. Full two story
 d. Three story
 e. Split level
 f. Typical
 g. Other, describe _____

16. Sill bolting:

- a. Structure bolted to foundation
 b. Structure not bolted to foundation
 c. Don't know

14. Exterior wall finish:

- a. Stucco
 b. Panel siding
 c. Metal siding
 d. Masonry veneer
 e. Other, describe _____

17. Roof configuration:

- a. Gable
 b. Hip
 c. Flat or very low slope
 d. Shed
 e. Other, describe _____

15. Foundation configuration:

- a. Slab-on-grade
 b. Crawl space without cripple walls
 c. Crawl space with cripple walls
 d. Exposed piers or posts
 e. Typical
 f. Metal
 g. Other, describe _____

18. Roof covering:

- a. Asphaltic membrane
 b. Wood shingle or shake
 c. Concrete
 d. Metal
 e. Elastomeric
 f. Other, describe _____

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D. EXTERIOR BUILDING INSPECTION

	YES	NO	N/A
19. General: (if yes, provide description and photos)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
a. Collapse, partial collapse, or building off foundation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b. Obvious lean in any story?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
20. Exterior walls: (if yes, provide description and photos)			
a. Fresh cracking at corners of door and window openings?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Fresh cracking at building corners?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Door or window openings racked out of square?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Broken glass in windows or doors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Wall leaning?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Bulging or delamination of stucco?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
g. Pattern of cracking that extends from the ground surface, through foundation, and wall?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
h. Evidence of recent relative movement at mudsill line?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
i. . . . At locations where the exterior stucco is continuous from the framing down over the foundation, is there cracking of stucco along the mudsill level accompanied by indications of permanent displacement (sliding) of the building relative to the foundation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j. Collapse, partial collapse, or separation of masonry veneer?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Severe cracking, separations, or offsets at building irregularities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Foundation: (if yes, provide description and photos)			
a. Fresh cracking of exposed perimeter foundation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b. Relative movement between slab and footing in "two-pour" slab-on-grade foundations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Ask occupant if any earthquake retrofits have been done to the building?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If Y describe: _____			
d. If the answer to c is Y, were bolts added to connect the building to the foundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. If the answer to c is Y, were plywood or sheathing added to any cripple walls under the building?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

OCULAR INSPECTION CHECKLIST

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D. EXTERIOR BUILDING INSPECTION (continued)

	YES	NO	N/A
22. Kitchen Hook (if yes, provide description and photos)			
a. Present on external wall?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Present at internal location?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Collapse or partial collapse?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Visible damage or cracking?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Visible tilting or separation from building?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Shifted or loose and displaced	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Deterioration or deformation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
23. Roof: (if yes, provide description and photos)			
a. Shifted or dislodged or concrete damage?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Impact damage to roof from falling object?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Displaced rooftop HVAC units?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Significantly sagging roof ridgelines?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Signs of movement between rafter tails and wall finishes at eaves?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Buckled/dislodged flashing or tearing of roof membrane, roof/wall intersections in split level buildings, additions, or other building irregularities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Tearing of roof membrane or deck waterproofing at re-entrant corners?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h. Toppling, shifting, or damage/leakage at refrigerant and electrical lines of rooftop mechanical equipment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i. Shifting of or damage to solar panels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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D. EXTERIOR BUILDING INSPECTION (continued)

	YES	NO	N/A
24. Attached or abutting improvements: (if yes, provide description and photos)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Collapse, partial collapse, or separation of attached porches, carports, Gazebos, or awnings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Evidence of recent settlement or displacement of exterior steps, patios, or walkways relative to the building?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Signs of movement between building floor and/ or exterior hardscape or retaining wall along the uphill side of hon steeply sloping sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Toppling, shifting, or damage/leakage at refrigerant and electrical lines of air conditioning condenser unit(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
25. Independent exterior improvements: (if yes, provide description and photos)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Damaged detached gazebo?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Damage to fences / privacy walls?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Damage to retaining walls?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Damage to walkway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Evidence of leakage from water supply lines?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Toppling, shifting, or damage/leakage at fuel connection of propane tanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Others damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

E. INTERIOR INSPECTION

26. General information

a. If interior access not possible, identify reason

i. Red tag

ii. Hazardous materials

iii. Other hazardous condition, describe _____

iv. Other, describe _____

b. Typical wall and ceiling finish

i. Drywall

ii. Plaster on gypsum lath

iii. Plaster on wood lath

iv. Other, describe Plaster on Concrete
and Acoustic Tiles 2'x4'

OCULAR INSPECTION CHECKLIST

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E. INTERIOR INSPECTION (continued)

	YES	NO	N/A
27. Walls: (if yes, provide description and photos)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Fresh cracking, buckling, spalling, or detachment of interior wall finish at corners of door and window openings?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Fresh cracking of wall finishes at wall corners or wall/ceiling intersections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Door or window openings racked out of square?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Wall leaning?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Pattern of cracking that extends from the floor slab through the wall?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Movement or sliding of walls relative to the floor?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Severe cracking, separations, or offsets at building irregularities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Doors damaged, difficult to operate, or inoperable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Windows damaged, difficult to operate, or inoperable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Ceilings: (if yes, provide description and photos)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Collapse of ceiling finish?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Fresh cracking of ceiling finishes, especially at re-entrant corners; cracks along corner bead at stairwell openings; cracking or tearing of finishes at ceiling/wall juncture; or multiple "nail pops"?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Damage to ceiling finishes in vicinity of corridors or commons places?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Separations or cracks in ceiling finishes at split-levels, re-entrant corners, additions, appendages, or other building discontinuities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Water damage or evidence of recent leakage from plumbing lines or roofing?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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Where description is indicated, attach additional pages of notes and photographs keyed to appropriate checklist item.

E. INTERIOR INSPECTION (continued)

	YES	NO	N/A
29. Floors: (if yes, provide description and photos)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Evidence of recent sloping, sagging, settlement or displacement of floors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. In slab-on-grade locations, fresh cracking of floor slab or floor finishes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Significant sagging or unusual bounciness of floors frames?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Separations or cracks in floor finishes at split-levels, re-entrant corners, additions, appendages, or other building discontinuities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Signs of movement between floor and exterior hardscape or retaining wall along the uphill side of buildings on steeply sloping sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. A pattern of fresh cracks, gaps, or joint separations in floor finishes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Impact damage to floor finishes from falling contents?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
30. Mechanical systems: (if yes, provide description and photos)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Displaced connection of appliance flues connected to chimneys?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Toppling, shifting, leakage from tank, leakage from water connections displaced flue connection or damage/leakage at gas line or electrical connection of water heater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Shifting, damage/leakage at gas line, flue connection, electrical connection, refrigerant line, and condensate drain connection of furnace or air conditioning fan-coil unit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Damage to gas line of gas stoves or gas fueled clothes dryers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Damage to toilets?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Decreased or restricted water pressure at appliances, faucets, or toilets?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Toppling or shifting of free-standing wood stove and/or flue?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h. Toppling, shifting, damage/leakage at fuel connection of fuel oil tank?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i. Other Damage in the dining room	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j. Damage near the gas tank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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Where description is indicated, attach additional pages of notes and photographs keyed to appropriate checklist item.

E. INTERIOR INSPECTION (continued)

- | | YES | NO | N/A |
|--|--------------------------|-------------------------------------|--------------------------|
| 31. Architectural woodwork and special finishes: (if yes, provide description and photos) | | | |
| a. Shifting of or damage to kitchen or bathroom cabinetry? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Impact damage to countertops from falling objects? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Cracking of ceramic tile in showers or tub/shower enclosures consistent with earthquake damage to adjacent wall finishes? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

F. CONTINGENT INSPECTIONS

- | | YES | NO | N/A |
|--|--------------------------|-------------------------------------|--------------------------|
| 32. Retaining Tank Wall damage? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 33. Water tank or other field subterranean structure | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

OCULAR INSPECTION CHECKLIST

G. RECOMENDACIÓN AL SECRETARIO

Departamento de Educación
Dr. Eligio Hernández Pérez
Secretario de Educación

Hora de Entrada
a Inspección: 10:00 am

Hora de Salida de
Inspección: 11:20 am

Escuela: Bonifacio Alvarado

Código: 12518

Municipio: Orocovi

Fecha de Inspección: 1/13/2020

- Abrir Escuela (Verde)
- Abrir Parcialmente la Escuela (Amarillo)
- No Abrir la Escuela (Rojo)

Comentarios:

1. En el edificio del comedor se observó tres columnas cortas con grietas diagonales. Se recomienda el cierre total del plantel escolar. (FOTO 1, 2 Y 3).
2. En el edificio #3 se observó columnas que están localizada entre losa de piso fundacion que tienen problemas estructurales. Estas presentan acero expuesto y corroído. (VER FOTO 4,5 Y 6).
3. Edificio #5 se observó columnas con acero expuesto y vicios de construcción. (VER FOTO 7 Y 8)

Se debe entender que este informe está basado solamente en una inspección ocular de las facilidades con el propósito de observar en las escuelas la presencia de daños significativos causados por los eventos sísmicos registrados hasta la fecha de este informe. La determinación de la adecuación estructural de las escuelas y su cumplimiento con los códigos aplicables de diseño o construcción, al igual que el desarrollo de recomendaciones para la rehabilitación de las facilidades, requerirá una evaluación detallada.

William Green Saez, PE
Preparado por: Nombre (Letra de Molde)

Firma

21809
Licencia



Víctor M. Rodríguez
Revisado por: Nombre (Letra de Molde)

Firma

21770
Licencia

Fecha de Expiración: 2024-07-03

Sello



OCULAR INSPECTION CHECKLIST



Foto Aérea Escuela Bonifacio Alvarado

OCULAR INSPECTION CHECKLIST



Foto 1



Foto 2

OCULAR INSPECTION CHECKLIST



Foto 3



Foto 4

OCULAR INSPECTION CHECKLIST



Foto 5



Foto 5

OCULAR INSPECTION CHECKLIST



Foto 7



Foto 8



COLEGIO DE INGENIEROS Y AGRIMENSORES
DE PUERTO RICO

PO Box 363845 * San Juan, Puerto Rico * 00936-3845
Tel. 787-758-2250 * Fax. 787-758-7639

ESTAMPILLA DIGITAL ESPECIAL (EDE)

Ing. Victor Rodriguez Ortiz, PE



Práctica de: Ingeniería
Licencia: 21770
Renglón: Certificación
Descripción del Trabajo: Inspección y Verificación de Instalaciones
Fecha de Emisión: 2020-01-23
Monto Emitido: \$5
Número de Serie: 0184-8662-6939-6499
Número de Caso: 12518
Proyecto / Unidad: 12518 Esc. Bonifacio Alvarado
Rol del Profesional: Evaluador

Certificación:

El profesional certifica con la emisión de la estampilla digital especial del Colegio de Ingenieros y Agrimensores de Puerto Rico el haber cumplido con las disposiciones de la Sección 11 de la Ley 319 del 15 de mayo de 1938, según enmendada.

La colocación del sello profesional constituye la cancelación de la estampilla digital especial